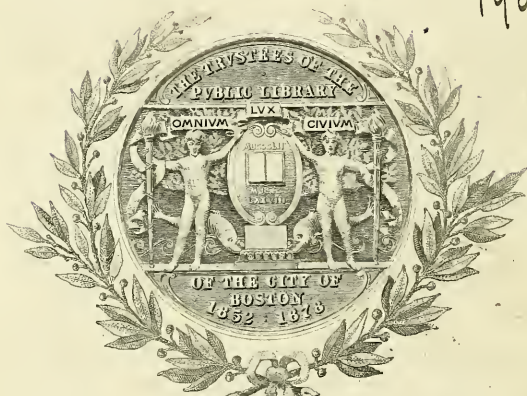




No 6357.56

1905



GIVEN BY

Boston. Public Works. Department.



ENGINEERING DEPARTMENT

THIRTY-NINTH ANNUAL REPORT

OF THE

CITY ENGINEER

BOSTON

FOR THE YEAR 1905

Compliments of

William Jackson,

City Engineer.

MUNICIPAL PRINTING OFFICE

1906

ENGINEERING DEPARTMENT

THIRTY-NINTH ANNUAL REPORT

OF THE

CITY ENGINEER

BOSTON

FOR THE YEAR 1905



BOSTON

MUNICIPAL PRINTING OFFICE

1906

6957.56 cont

Boston Public Works Department

1905

ENGINEERING DEPARTMENT, CITY HALL,
BOSTON, February 1, 1906.

HON. JOHN F. FITZGERALD,
Mayor of the City of Boston:

SIR, — The following report of the expenses and operation of this department for the year ending January 31, 1906, is submitted:

The duties of the City Engineer include the designing and superintending of the construction of new bridges, retaining walls, city wharves, and such other public engineering works as the City Council may authorize; the making of such survey plans, estimates, statements and descriptions, and taking such levels as the City Government or any of its departments or committees may require; the custody of all surveys and plans relating to the laying out, locating anew, altering, widening, or discontinuing of streets, and the new engineering construction for all departments of the city. He must be consulted on all work where the advice of a civil engineer would be of service. The office of the City Engineer was established by ordinance on October 31, 1850, and by chapter 449 of the Acts of 1895.

The following is a statement of engineering expenses from February 1, 1905, to January 31, 1906:

Amount of department appropriation for 1905-1906	\$82,000 00
Amount expended for 1905-1906	81,989 27
Unexpended balance	<u>\$10 73</u>

STATEMENT OF EXPENDITURES, DEPARTMENT APPROPRIATIONS.
(Auditor's Report, pages 62-63.)

Salaries :	
Engineer, William Jackson,	\$6,000 00
Assistant Engineer, draughtsmen and assistants	68,255 29
	<u>\$74,255 29</u>
Travelling expenses	1,771 03
Automobile	\$1,094 00
Repairs, supplies and storage	97 51
	<u>1,191 51</u>
Instruments, tools and repairs	1,185 88
Stationery	514 93
Telephone service	471 16
Horse-keeping	466 47
Furniture and office expenses	438 87
Blue printing and photographing	380 97
Books and papers	327 50
Binding and plans	317 22
Printing	307 42
Washing and small supplies	278 89
Typewriting	52 55
Messenger service	22 00
Carting	7 58
	<u>\$81,989 27</u>
Total	<u>\$81,989 27</u>

ABOLISHMENT OF GRADE CROSSINGS.

Blue Hill Avenue and Oakland Street.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :	
Land damages	\$3,329 93
Sewer construction	2,183 30
Appraisal services	782 70
Auditing	56 21
	<u>\$6,352 14</u>
Expended previous to 1905	111,881 12
	<u>\$118,233 26</u>

Cambridge and Perkins Streets — Charlestown.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Land damages	\$179 36	
Appraisal services	150 00	
		\$329 36
Expended previous to 1905		75,600 15
		<u>\$75,929 51</u>

Congress Street.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Appraisal services	\$1,680 40	
Expended previous to 1905	1,230,789 55	
		<u>\$1,232,469 95</u>

Dorchester Avenue.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Land damages	\$10,393 50	
Removing old building	15 00	
		\$10,408 50
Expended previous to 1905		999,032 04
		<u>\$1,009,440 54</u>
Cr. sale of land and buildings		978 09
		<u>\$1,008,462 45</u>

East Boston.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Land damages	\$58,725 00	
Porter-street sewer	13,976 77	
Marion-street drain	10,091 49	
Appraisal services	8,561 25	
Bennington-street sewer outlet, etc.	7,505 46	
Curtis-street sewer	6,828 55	
Relocating water pipes	3,405 49	
Engineering	2,152 66	
Paving, fences, etc.	284 58	
Printing	4 83	
		\$111,536 08
Expended previous to 1905		14,149 32
		<u>\$125,685 40</u>

ATLANTIC-AVENUE BRIDGE.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Steel superstructure . . .	\$94,226 33
South Boston approach, land taking	32,121 75
Boston Terminal Co. for temporary work on signals, tracks, etc.	22,109 47
Flooring	13,786 50
Paving, fences, etc.	10,845 09
Engineering	9,257 45
Paint	488 36
Printing	174 95
Advertising	146 47

\$183,156 37

Expended previous to 1905 230,416 86

\$413,573 23

BROADWAY BRIDGE, REBUILDING.

Appropriation \$370,000 00

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Land damage	\$1,000 00
Three piers	500 00
Paving, fences, etc.	230 00
Wall at Ceppi's factory	52 57

1,782 57

Expended previous to 1905 330,327 74

332,110 31

Balance February 1, 1906 \$37,889 69

BROOKLINE-STREET BRIDGE.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Boston approach, abutment, etc.	\$27,421 20
Pile and trestle work	9,764 13
Dredging channel	6,081 58
Engineering	2,919 78
Inspection	1,270 58
Iron fences	600 00

Carried forward \$48,057 27

<i>Brought forward</i>	\$48,057 27	
Printing	168 68	
Advertising	119 31	
Cement testing	60 00	
	<hr/>	\$48,405 26
Expended previous to 1905		1,847 31
		<hr/>
		<u>\$50,252 57</u>

NORTHERN-AVENUE BRIDGE.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Piers and abutment	\$16,228 99	
Engineering	5,563 42	
Rent of office	418 55	
Printing	63 82	
Advertising	53 84	
Cement testing	20 00	
Telephone	19 74	
	<hr/>	\$22,368 36
Expended previous to 1905		3,769 72
		<hr/>
		<u>\$26,138 08</u>

STAIRS FROM SUMMER STREET TO A STREET.

Expenditures from February 1, 1905, to January 31, 1906 :

Items of expenditure :

Stairs	\$592 25	
Safety treads	87 00	
Labor and materials	53 13	
Landing stones	37 00	
	<hr/>	\$769 38
		<u></u>

BRIDGES.

The annual inspection of all highway and foot-bridges has been made, together with special examinations when notified by the Superintendent of Streets of the progress of repairs.

The management of all the bridges and draws between Cambridge and Boston, by the Acts of 1898, chapter 467, is vested in a board of two commissioners, which has charge of the following seven bridges, viz. : Brookline street, Cambridge street, Harvard, North Harvard street, Prison Point, West Boston, and Western avenue to Cambridge; one-half the cost of the maintenance of these bridges is paid by each of these cities.

In the list of bridges those marked with a star (*) are over navigable waters, and are each provided with a draw, the openings in which are shown in a table in Appendix A.

I. — BRIDGES WHOLLY SUPPORTED BY BOSTON.

Agassiz road, in the Fens.

Allston bridge, over Boston & Albany Railroad, Brighton.

Arborway bridge, in Arborway, over Stony brook.

Ashland street, over Providence Division, N. Y., N. H. & H. R.R., West Roxbury.

Athens street, over Midland Division, N. Y., N. H. & H. R.R.

Audubon road, over Boston & Albany Railroad.

Beacon street, over outlet to the Fens.

Beacon street, over Boston & Albany Railroad.

Bennington street, over Boston, Revere Beach & Lynn Railroad.

Berkeley street, over Boston & Albany Railroad.

Bernier-street foot-bridge, in the Riverway.

Berwick-park foot-bridge, over Providence Division, N. Y., N. H. & H. R.R.

Blakemore street, over Providence Division, N. Y., N. H. & H. R.R.

Bolton street, over Midland Division, N. Y., N. H. & H. R.R.

Boylston street, in the Fens.

Boylston street, over Boston & Albany Railroad.

Bridle path, over Muddy river, in the Riverway.

* Broadway, over Fort Point channel.

Broadway, over Boston & Albany Railroad.

Brookline avenue, over Boston & Albany Railroad.

Brooks street, over Brooks street, Brighton.

Byron street, over Boston, Revere Beach & Lynn Railroad.

* Castle Island foot-bridge, from Marine park, South Boston, to Castle Island.

Charlesgate, over Boston & Albany Railroad, in the Fens.

Charlesgate, over Ipswich street, in the Fens.

* Charlestown bridge, from Boston to Charlestown.

* Chelsea bridge, South, over South channel of Mystic river.

* Chelsea street, from East Boston to Chelsea.

Circuit drive, over Scarboro' pond, in Franklin park.

Columbia road, over old Colony Division, N. Y., N. H. & H. R.R.

Columbia road, over Shoreham street.

Columbus avenue, over Boston & Albany Railroad.

* Commercial point, or Tenean, Dorchester.

Commonwealth avenue, in the Fens.

- * Congress street, over Fort Point channel.
- Cottage Farm bridge, over Boston & Albany Railroad, Brighton.
- Cottage-street foot-bridge, over flats, East Boston.
- Dartmouth street, over Boston & Albany Railroad and Providence Division, N. Y., N. H. & H. R.R.
- * Dorchester avenue, over Fort Point channel.
- * Dover street, over Fort Point channel.
- Ellicott arch, in Franklin park.
- Fen bridge, in the Fens.
- Ferdinand street, over Boston & Albany Railroad.
- Forest Hills entrance, in Franklin park.
- Gainsborough-street foot-bridge, over Providence Division, N. Y., N. H. & H. R.R.
- Gold street, over Midland Division, N. Y., N. H. & H. R.R.
- Huntington avenue, over Boston & Albany Railroad.
- Ipswich street, over Waterway, in the Fens.
- Irvington-street foot-bridge, over Providence Division, N. Y., N. H. & H. R.R.
- * L street, over Reserved channel, South Boston.
- Leverett-pond foot-bridge, in Leverett park.
- Linden Park street, over Stony brook.
- * Malden bridge, from Charlestown to Everett.
- Massachusetts avenue, over Boston & Albany Railroad.
- Massachusetts avenue, over Providence Division, N. Y., N. H. & H. R.R.
- * Meridian street, from East Boston to Chelsea.
- * Mount Washington avenue, over Fort Point channel.
- Neptune road, over Boston, Revere Beach & Lynn Railroad.
- Newton street, over Providence Division, N. Y., N. H. & H. R.R.
- Public Garden foot-bridge.
- Scarboro'-pond foot-bridge, in Franklin park.
- Shawmut avenue, over Boston & Albany Railroad and Providence Division, N. Y., N. H. & H. R.R.
- Southampton street, east of Midland Division, N. Y., N. H. & H. R.R.
- Southampton street, west of Midland Division, N. Y., N. H. & H. R.R.
- Summer street, over A street.
- Summer street, over B street.
- Summer street, over C street.
- * Summer street, over Fort Point channel.
- * Warren bridge, Boston to Charlestown.
- West Rutland-square foot-bridge, over Providence Division, N. Y., N. H. & H. R.R.

Winthrop, from Breed's Island to Winthrop.
Wood Island park foot-bridge, over Boston, Revere Beach & Lynn Railroad.

II. — BRIDGES OF WHICH BOSTON SUPPORTS THE PART WITHIN ITS LIMITS.

Bellevue street, over Muddy river, in the Riverway.
Bernier-street foot-bridge, over Muddy river, in the Riverway.
Brookline avenue, over Muddy river, in the Riverway.
Central avenue, from Dorchester to Milton.
* Chelsea bridge, North, over North channel, Mystic river.
* Granite bridge, from Dorchester to Milton.
Huntington avenue, over Muddy river, in the Riverway.
Longwood avenue, over Muddy river, in the Riverway, and over Boston & Albany Railroad.
Milton bridge, from Dorchester to Milton.
* Neponset bridge, from Dorchester to Quincy.
* North Beacon street, from Brighton to Watertown.
Spring street, from West Roxbury to Dedham.
* Western avenue, from Brighton to Watertown.

III. — BRIDGES OF WHICH BOSTON PAYS A PART OF THE COST OF MAINTENANCE.

Albany street, over Boston & Albany Railroad freight tracks.
Ashmont street and Dorchester avenue, over Old Colony Division, N.Y., N.H. & H. R.R.
Blue Hill avenue, over Midland Division, N. Y., N. H. & H. R.R., Mattapan.
Boston street, over Old Colony Division, N. Y., N. H. & H. R.R.
Brookline street, from Brighton to Cambridge.
* Cambridge street, from Brighton to Cambridge.
Cambridge street, over Boston & Maine and Boston & Albany Railroads.
Chelsea bridge, over the Boston & Maine Railroad.
Dorchester avenue, over Old Colony Division, N. Y., N. H. & H. R.R.
Everett street, over Boston & Albany Railroad, Brighton.
* Harvard bridge, from Boston to Cambridge.
Harvard street, over Midland Division, N. Y., N. H. & H. R.R., Dorchester.
Norfolk street, over Midland Division, N. Y., N. H. & H. R.R., near Dorchester station, Dorchester.

Norfolk street, over Midland Division, N. Y., N. H. & H. R.R., near Mattapan station, Dorchester.

* North Harvard street, from Brighton to Cambridge.

Oakland street, over Midland Division, N. Y., N. H. & H. R.R., Mattapan.

Perkins street, over Boston & Maine and Boston & Albany Railroads.

* Prison Point bridge, Charlestown to Cambridge.

Southampton street, over Old Colony Division, N. Y., N. H. & H. R.R.

Summer street, over freight tracks, N. Y., N. H. & H. R.R.

* West Boston temporary bridge, from Boston to Cambridge.

West Fourth street, over Old Colony Division, N. Y., N. H. & H. R.R.

* Western avenue, from Brighton to Cambridge.

IV.—BRIDGES SUPPORTED BY RAILROAD CORPORATIONS.

1st.—Boston & Albany R.R.

Albany street, over passenger tracks.

Harrison avenue.

Market street, Brighton.

Tremont street.

Washington street.

2d.—Boston & Maine and Boston & Albany Railroads.

Main street.

Mystic avenue.

3d.—Boston & Maine R.R., Eastern Division.

Wauwatosa avenue, East Boston.

4th.—Boston, Revere Beach & Lynn R.R.

Everett street.

5th.—New York, New Haven & Hartford R.R., Midland Division.

Broadway.

Dorchester avenue.

Fifth street.

Fourth street.

Morton street, Dorchester.

Second street.

Silver street.

Sixth street.
Third street.
Washington street, Dorchester.

6th. — New York, New Haven & Hartford R.R., Old Colony Division.

Adams street.
Cedar Grove Cemetery.
Freeport street.
Medway street.
Savin Hill avenue.

7th. — New York, New Haven & Hartford R. R., Providence Division.

Albany street.
Beech street, West Roxbury.
Bellevue street, West Roxbury.
Berkeley street.
Broadway.
Canterbury street, West Roxbury.
Castle square.
Centre and Mt. Vernon streets, West Roxbury.
Columbus avenue.
Dartmouth street.
Dudley avenue, West Roxbury.
Harrison avenue.
Park street, West Roxbury.
Washington street.

V. — BRIDGE SUPPORTED BY THE METROPOLITAN PARK COMMISSION.

Mattapan bridge, Dorchester to Milton.

VI. — BRIDGE SUPPORTED BY THE CHARLES RIVER BASIN COMMISSION.

* Craigie temporary bridge.

RECAPITULATION OF BRIDGES.

I.	Number wholly supported by Boston . . .	72
II.	Number of which Boston supports that part within its limits	13
III.	Number of which Boston pays a part of the cost of maintenance	23
	<i>Carried forward</i>	<hr/> 108

<i>Brought forward</i>	108
IV. Number supported by railroad corporations :	
1. Boston & Albany Railroad	5
2. Boston & Maine and Boston & Albany Railroads,	2
3. Boston & Maine, Eastern Division	1
4. Boston, Revere Beach & Lynn Railroad	1
5. N. Y., N. H. & H. R.R., Midland Division	10
6. N. Y., N. H. & H. R.R., Old Colony Division	5
7. N. Y., N. H. & H. R.R., Providence Division	14
V. Number supported by the Metropolitan Park Commission	1
VI. Number supported by Charles River Basin Commission	1
Total	<hr/> 148 <hr/>

Agassiz-road Bridge (in the Fens).

This bridge was built in 1887, of brick and stone masonry. It is maintained by the Park Department, and is in good condition.

Albany-street Bridge (over the Boston & Albany R.R. Freight Tracks).

The original structure was built in 1856-57, and rebuilt in 1867-68. The present bridge was built in 1886-87, and is maintained in part by the City of Boston and in part by the Boston & Albany Railroad. With exception of the railings and the boxing around the bottom chords, the bridge is in fair condition. The boxing should be renewed. The railings are in very poor condition and should be rebuilt.

Allston Bridge (over the Boston & Albany R.R., Brighton).

This is an iron bridge, built in 1892. The ironwork under the flooring needs painting, and new lower planking should be put in. The wheel guard timbers should also be renewed when the planking is repaired.

Arborway Bridge (over Stony brook, in Arborway, near Forest Hills Station).

This is a wooden bridge resting on abutments of vulcanized spruce piles. The stringers and under-planking are of vulcanized hard pine. It was built in 1893, and is maintained by the Park Department. It is in fair condition.

Ashland-street Bridge (over Providence Division, New York, New Haven & Hartford R.R., West Roxbury).

The present structure is of iron, and was built in 1875. In October, 1903, the lower planking and such of the stringers as were found to be poor were renewed. With the exception of one of the fences, which should be rebuilt, the bridge is in good condition.

Ashmont-street and Dorchester-avenue Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

This is a wooden bridge, formerly maintained by the railroad company. It was lengthened on the Boston side in 1895, and now the city maintains 75 feet of the northerly part. The decking should be renewed and the sidewalk should be repaired.

Athens-street Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1874. The sidewalk and deck planking should be renewed and the bridge painted.

Audubon-road Bridge (over the Boston & Albany R.R.).

This is a steel plate girder bridge, built in 1893-94, and is maintained by the Park Department. The sidewalk planking is in poor condition and should be renewed, and the ironwork over the main tracks should be painted.

Beacon-street Bridge (over Outlet of the Fens).

This bridge was built in 1880-81, and had, up to 1901, a wooden floor for the roadway. At the latter date a new floor was built, consisting of 18-inch steel I-beams encased in Portland cement concrete, and the roadway was paved with hard-pine blocks, treated by the creosinate process. The bridge is now in good condition, except the northerly sidewalk, which should be repaired.

Beacon-street Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1884-85, widened in 1887-88, and the central roadway further widened in 1890 for the convenience and at the expense of the street railway company. For the last two years attention has been called to the condition of the ironwork below the floor. It

is now recommended that the flooring of this bridge be renewed and the ironwork thoroughly cleaned and painted.

Bellevue-street Bridge (over Muddy River in Riverway).

This is a segmental masonry arch of 44 feet span and 15 feet rise. It was built in 1893 by the Park Departments of Boston and Brookline, and is maintained jointly by them.

Bennington-street Bridge (over Boston, Revere Beach & Lynn R.R.).

This bridge is made up of two independent parts; the old part is of iron, built in 1889; the new part is of steel, built in 1902. All the fences and the outside girder of new bridge need painting, and the boarding around the trusses needs re-fastening; otherwise the bridge is in good condition.

Berkeley-street Bridge (over Boston & Albany R.R. and Providence Division, N.Y., N.H. & H. R.R.).

The bridge over the tracks of the Boston & Albany Railroad, which is maintained by the city, was originally built for the Boston Water Power Company, and accepted by the city in 1869. The present structure over these tracks is a through plate girder bridge, and was built in 1891. It is now in good condition, except the lower planking, which should be renewed.

The bridge over the tracks of the N.Y., N.H. & H. R.R. was built in 1899, and is maintained by that company.

Bernier-street Foot-bridge (over Bridle Path in Riverway).

This is a semi-circular masonry arch of 38 feet 4 inches span. It was built in 1893, and is maintained by the Park Department.

Bernier-street Foot-bridge (over Muddy River).

This is a segmental masonry arch of 52 feet span and 14 feet rise. It was built in 1893 by the Park Departments of Boston and Brookline, and is maintained jointly by them.

Berwick-park Foot-bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron foot-bridge, erected in 1894. The iron stairs and piers were new, but the trusses and floor-beams were those built for Franklin street in 1883. The planking

is poor and should be renewed. The risers on the stairs are very rusty and should be cleaned and painted.

Blakemore-street Bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1881-82. The bridge should be sheathed and the lower planking renewed. The whole bridge should be painted this year, as some of the metal is very thin and is now rusting badly.

Blue Hill-avenue Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This is a steel bridge built by the New York, New Haven & Hartford R.R. in 1903, and is over the railroad location. The surface of the bridge is maintained by the city, the remainder by the railroad company; it is in good condition.

Bolton-street Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This is a wooden bridge, built in 1889. It was rebuilt during the summer; the fences are badly marked up and should be painted a lighter color.

Boston-street Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

This is a plate girder bridge, built in 1900, in connection with the abolishment of the grade crossing on Dorchester avenue. The surface of the bridge is maintained by the city, and the rest of the structure by the railroad company. The bridge should be painted; otherwise it is in good condition.

Boylston-street Arch Bridge (in the Fens).

This is a stone arch bridge, built in 1881. It is in good condition, with exception of coping, which should be repointed.

Boylston-street Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1886-88. The under part of this bridge is very rusty and should be carefully cleaned and painted. The sidewalk planking is badly worn and should be renewed and the fascias repaired.

Bridle-path Bridge (over Muddy River in the Riverway).

This is a masonry bridge of three arches; the central arch is elliptical in form, with a span of 30 feet and a rise of 9

feet 6 inches; the side arches are semi-circular, 15 feet in diameter. It was built in 1894, and is maintained by the Park Department. It is in good condition.

Broadway Bridge (over Fort Point Channel).

This is a steel bridge on masonry piers, with the exception of the draw and one span over the N. Y., N. H. & H. R.R. It is a deck bridge, the span over the railroad being of plate girders projecting about three feet above the curb grade. The draw span is supported by two trusses, and remains as it was built in 1874-75, except that it was raised in 1904 to correspond with the new grade of the bridge. All of the bridge except the draw was entirely rebuilt in 1901-04. ✓

The spans over Lehigh and Foundry streets have the floors supported on brick and concrete arches. The remainder of the new bridge has a flooring for the roadway of 6-inch plank, and on the whole roadway there is a granite block pavement. The sidewalks have an asphalt surface supported on brick and concrete arches over Lehigh and Foundry streets, on 4-inch plank on the through span and on buckle plates for the remainder of the bridge. The bridge is in good condition.

Broadway Bridge (over Boston & Albany R.R.).

The old bridge, built in 1880-81, was replaced in 1900 by the present bridge. The railings have been painted, but the rest of the structure should be. The sidewalks should also be repaired. ✓

Brookline-avenue Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1884. The under planking is in poor condition and the ironwork below the floor is badly rusted. The recommendation made last year that "the deck of this bridge should be renewed and the ironwork cleaned and painted," is here repeated.

Brookline-avenue Bridge (over Muddy River in the Riverway).

This is a semi-circular masonry arch of 15 feet span. It was built in 1892 by the Park Departments of Boston and Brookline, and is maintained by them jointly.

Brookline-street Bridge (from Brighton to Cambridge).

This bridge was formerly called Essex-street bridge, and was in the care of the Commissioners for Boston and Cam-

bridge Bridges; it was closed to travel October 2, 1905, and is now being rebuilt under the Acts of 1904, chapter 391.

(See page 77.)

Brooks-street Bridge (near Faneuil Station, Brighton).

This is a steel bridge, with a concrete and asphalt floor, built in 1902. The bridge should be painted; otherwise it is in good condition.

Byron-street Bridge (over Boston, Revere Beach & Lynn R.R.).

This is a wooden bridge, built in 1889. The sidewalks and fences need repairing; the bulkheads are in very bad condition, and need rebuilding; the rods in the trussed beams need painting; the nests built by English sparrows among the trussed beams, over the tracks, should be removed.

Cambridge-street Bridge (from Brighton to Cambridge).

This is a wooden pile bridge with a wooden leaf draw. It was rebuilt in 1884; the draw was rebuilt in 1891. The bridge is in the care of the Commissioners for the Boston and Cambridge Bridges, and the city pays one-half the cost of maintenance. Electric motors have been installed for raising the draw. The Boston side of the bridge is in poor condition, and needs extensive repairing. The waterways need replanking, especially under the Boston leaf of the draw, where the piling needs additional securing; some of the piles are in poor condition, and need renewal; the deck planking on the Boston side has been repaired in spots many times, and should be entirely renewed and additional stringers added; one draw-arm needs renewal; the fender-guards need repairing; the draw should be adjusted. The support to the draw tender's house needs strengthening, and a boat should be provided. The Cambridge side of the bridge is in fair condition.

Cambridge-street Bridge (over Boston & Maine and Boston & Albany Railroads, Charlestown).

This is a steel bridge of four spans, built in 1901 by the Boston & Maine Railroad. The surface is maintained by the city, the remainder by the railroad company. The bridge should be painted and some of the sidewalk planking needs renewal.

Castle Island Foot-bridge (from Marine Park to Castle Island).

This is a temporary foot-bridge built in 1892, and is maintained by the Park Department. It connects the Marine Park with Castle Island, and is furnished with a draw, so that if desired by the United States authorities the island can be cut off from the mainland. A small amount of replanking has been done. Repairs are needed on the fence and planking, and the bridge should be painted; otherwise the bridge is in fair condition.

Central-avenue Bridge (over Neponset River, Dorchester Lower Mills).

This is an iron bridge, and was built in 1876. The city maintains the part within its limits. The deck and sidewalk planking need patching, some of the stringers need renewal and the bridge needs painting.

Charlesgate Bridge (over Boston & Albany R.R., in the Fens).

This is an iron bridge, built in 1881-82, and is maintained by the Park Department. The railings need painting and the roadway should be sheathed.

Charlesgate Bridge (over Ipswich street, in the Fens).

This is a deck-plate girder bridge with a buckle-plate floor. The roadway is paved with asphalt and the sidewalks with artificial stone. The portion of artificial stone walk over the water pipes, reported last year as having been torn up, has been replaced and the bridge is in good condition. It should be painted next year.

Charlestown Bridge (from Boston to Charlestown).

This bridge was opened to public travel November 27, 1889, and superseded the old Charles River bridge, which was built in 1785-86.

The present bridge over the river consists of ten spans of the deck-plate type, each 85 feet long, and a swing or turntable draw 240 feet 6 inches long.

The bridges over Water street and over the railroad tracks each consist of two spans of steel I-beams, with brick arches turned between the beams. The entire structure is in good condition.

Chelsea Bridge (over Boston & Maine R.R.).

This is an iron bridge, built by the Boston & Maine Railroad Company in 1894, and is over the railroad location.

The surface of the bridge is maintained by the city, the remainder by the railroad company. The wheel-guard is too low and narrow and the fences need repairing and painting, and the sidewalk planking needs repairing; otherwise the bridge is in good condition.

Chelsea Bridge, North (over North Channel, Mystic River).

The city maintains the part within its limits. The original structure was built in 1802-03. The piles under the main bridge were driven in 1880. The upper part of the bridge, the draw and draw foundations were built in 1895. The draw-way was widened to 60 feet in 1900, the draw foundation being enlarged, the draw lengthened, and the draw piers built. Ordinary repairs have been made; the tops of some of the old piles have begun to decay and should be spliced; the older fender-guards are in poor condition; some of the sidewalk planking needs renewal; the fence needs repairing and painting.

Chelsea Bridge, South (over South Channel, Mystic River).

This is a pile bridge with an iron draw. The original bridge was built in 1802-03. The piles of the present bridge were driven and the draw was built in 1877. That part of the bridge above the girder caps was rebuilt at a higher grade, and the draw was raised in 1895. General repairs have been made. The fender-guards are in poor condition; the top of the pier and wharf should be rebuilt; the waterway should be repaired; the deck planking and sidewalks on the draw should be renewed; two iron brackets on the draw should be repaired, and several pieces of track should be renewed.

Chelsea-street Bridge (from East Boston to Chelsea).

This is a wooden pile bridge, with an iron swing draw; the original bridge was built in 1834; was rebuilt in 1848, 1873, and again in 1894-95. The decking and sidewalk planking need renewal; a new latch and a new wheel for operating the adjusting screw should be provided, and the draw should be painted.

Circuit-drive Bridge (over Scarboro' Pond in Franklin Park).

This is an elliptical masonry arch of 30 feet span and 6 feet 3 inches rise. It was built in 1893, and is maintained by the Park Department.

Columbia-road Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

This is a deck plate girder bridge of two equal spans, one over the tracks of the N. Y., N. H. & H. R.R., and the other over Old Colony avenue, and was built in 1902. The roadway is paved with Canton brick, cement grout joints, and laid on hard pine planking. The sidewalks have an asphalt wearing surface, and although they were laid only three years ago, they are now badly cracked and should be put in good condition. The railing needs painting.

Columbia-road Bridge (over Shoreham street).

This bridge was built in 1902. It is a two-span steel-beam structure, with brick and concrete arches turned between the beams; the roadway is paved with Canton brick laid with cement grout joints. The sidewalk is of artificial stone. The bridge should be painted, otherwise it is in good condition.

Columbus-avenue Bridges (over Boston & Albany R.R., and Providence Division, New York, New Haven & Hartford R.R.).

The bridge over the Boston & Albany Railroad was built in 1876-77, and is maintained by the city. In 1899 the bridge was shortened 11 feet at its south end, and a pier built in place of the old south abutment.

The sidewalk planking needs patching and the roadway should be sheathed.

The bridge over the tracks of the N. Y., N. H. & H. R.R. was built in 1899, and is maintained by that company.

Commercial Point or Tenean Bridge (Dorchester).

This is a wooden pile bridge with a wooden leaf draw. The piles were driven in 1875. The draw and upper part of the bridge was rebuilt in 1901. The planking on the draw needs renewal, otherwise the bridge is in fair condition.

Commonwealth-avenue Bridge (in the Fens).

This is an iron bridge, and was built in 1881-82. It is in good condition with the exception of the sidewalk planking and sheathing, which should be renewed. It is maintained by the Park Department.

Congress-street Bridge (over Fort Point Channel).

This is a wooden pile bridge, with an iron turn-table draw, on a stone foundation, and was built in 1874-75.

The paving and roadway planking on the main bridge is in poor condition; the roadway planking that has not been renewed recently should be renewed, and some of the stringers should be replaced with new ones; the draw-pier will soon need extensive repairing.

(See page 71.)

Cottage Farm Bridge (over Boston & Albany R.R., Brighton).

The present bridge was built in 1895-96. With the exception of the plate girders on the outside lines of the bridge, and some special construction under the sidewalks, the superstructure is composed of 20-inch steel beams, filled between with brick arches and Portland cement concrete, on which is a wearing surface of Sicilian rock asphalt. The bridge needs painting, otherwise it is in good condition.

Cottage-street Foot-bridge (over flats, East Boston).

This is a wooden pile bridge, built in 1889, for foot travel only; it is now being repaired.

(See page 71.)

Craigie Temporary Bridge.

This is a wooden pile bridge built by the Charles River Basin Commission to accommodate travel during the construction of the Charles River Dam, which is to be built on the site of old Craigie Bridge. It was opened to travel July 2, 1905, when the old bridge was closed and its removal began July 5. The temporary bridge is over the former B. & M. R.R. location, and a part of the piling was left for the new bridge.

The bridge is 1418.7 feet long, 49 feet 2 inches wide, and has a roadway 40 feet wide and an 8-foot sidewalk, except near the draw, where the roadway divides into two roadways of 18 feet each and the sidewalk is narrowed to 6 feet. It is in the care of the commission and is in good condition.

Dartmouth-street Bridges (over Boston & Albany R.R. and Providence Division, New York, New Haven & Hartford R.R.).

The bridge over the Boston & Albany Railroad was built in 1878-79, and is maintained by the city. Very extensive

changes were made in this bridge in 1899 by the railroad companies, necessitated by the new location of the tracks of the N. Y., N. H. & H. R.R. leading to the South Station and the abandoning of the tracks connecting this road with the B. & A. R.R. The bridge has been sheathed, and some patching done to lower planking. This sidewalk planking is very thin and should be renewed. The bridge over the tracks of the N. Y., N. H. & H. R.R. was built in 1899, and is maintained by the railroad company.

Dorchester-avenue Bridge (over Fort Point Channel).

This is a wooden pile bridge, with a double retractile iron draw, and was rebuilt in 1891-92. Temporary stiffeners have been placed under the angle-irons which support the track stringers, which will later be replaced by permanent ones. Early in May a load of about 35 tons of steel broke through the deck of the draw, breaking several stringers, which were renewed, and general repairs have been made. The sidewalk and deck planking on the draw should be renewed and the bridge should be painted. The sills and planking on the wharves and piers need renewal, and additional supports are needed under the house; some of the spur-shores have begun to decay, and should be refitted; the irons on the waterway and the ladder should be repaired; the wreckage among the piling should be removed.

Dorchester-avenue Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

This is a steel bridge, built in 1900, over the new location of the N. Y., N. H. & H. R.R. The surface of the bridge is maintained by the city and the rest of the structure by the railroad company. It needs painting badly; otherwise it is in good condition.

Dover-street Bridge (over Fort Point Channel).

This was originally a wooden pile bridge, built in 1805, rebuilt in 1858-59, and again in 1876. In 1893-94, upon the abolition of the grade crossing of the Old Colony Railroad, the present iron structure, resting on masonry piers, was built. General repairs have been made; some new track is needed for the draw; the rack should be realigned in order that the draw may be reversed; the concrete of the draw foundation pier should be repaired and the other piers should be repointed; the lower planking on the draw should

be renewed, and the planking on the wharves should be repaired; otherwise the bridge is in good condition.

(See page 72.)

Ellicott-arch Bridge (in Franklin Park).

This is a semi-circular masonry arch of 17 feet 6 inches span. It was built in 1889, and is maintained by the Park Department.

Everett-street Bridge (over Boston & Albany R.R., Brighton).

This is an iron bridge, built in 1891 by the Boston & Albany Railroad Company. Some of the woodwork should be repaired, particularly the boxing around the trusses, and the sidewalk planking should be renewed. The lower planking is also poor.

Fen Bridge (in the Fens).

This bridge was built in 1891-93. It is in good condition.

Ferdinand-street Bridge (over Boston & Albany R.R.).

This is an iron bridge built in 1892. In 1899 this bridge was shortened about three feet at its southerly end, and the old south abutment replaced by a brick pier. The bridge has been painted during the year and the lower planking has been renewed where necessary. With the exception of the sidewalk planking the bridge is now in good condition.

Forest Hills Entrance Bridge (in Franklin Park).

This bridge was built in 1894-95. It is maintained by the Park Department, and is in good condition.

Gainsborough-street Foot-bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron foot-bridge erected in 1904, and is now in a good condition.

Gold-street Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This bridge was built in 1895, replacing a foot-bridge which was built in 1890; the sidewalk planking should be renewed; the fences should be repaired; the bridge should be painted, and the walls need some pointing; otherwise the bridge is in good condition.

Granite Bridge (from Dorchester to Milton).

This is a wooden pile bridge, with a wooden leaf draw. The city maintains the part within its limits. The bridge was originally built in 1837. It is in poor condition, and should be rebuilt; the abutment should be repaired; the piles are much worn; several of the stringers show considerable rot; the sidewalk plank and the planking on the draw need renewal, and the tops and sides of the piers are very poor.

Harvard Bridge (from Boston to Cambridge).

This is an iron bridge with an iron turn-table draw, and was built in 1887-91. The bridge is in the care of two commissioners, one appointed from Boston and one from Cambridge, and the expense of maintenance is borne equally by each city.

The roadway of the fixed spans was repaired in 1901-02 and a wooden block paving laid. During the past year the asphalt sidewalks on these spans have been rebuilt with 3-inch hard pine wearing surface. The railings have also been painted. The roadway stringers on the draw-span and the lower planking are in very bad condition, and cannot be considered safe for the heavy traffic which passes over the draw. It should be renewed without delay. The draw pier should be replanked and other repairs made to the pier and fenders.

Harvard-street Bridge (over Midland Division, New York, New Haven & Hartford R.R., Dorchester).

This is a steel bridge, built in 1904 under an agreement between the city and the New York, New Haven & Hartford Railroad Company. It is in good condition.

Huntington-avenue Bridge (over Boston & Albany R.R.).

This is an iron bridge. It was built in 1872, and in 1876-77 the abutments were rebuilt and the bridge widened by the addition of two new girders. In 1896, in consequence of changes in the grade of the avenue, the floor was entirely rebuilt and new girders added for supporting the water pipes. This is one of the oldest bridges in the city, and its condition is such that plans should be prepared at once for replacing it with a structure of sufficient strength to care for the present heavy traffic.

Huntington-avenue Bridge (over Muddy River).

This is a semi-circular masonry arch of 15 feet span. It was built in 1893, and is maintained by the Park Departments of Boston and Brookline.

Ipswich-street Bridge (over Waterway in the Fens).

The bridge was built in 1898, and is in good condition, excepting the railings, which should be painted.

Irvington-street Foot-bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron foot-bridge, and was built in 1892. The planking is thin, but otherwise the bridge is in good condition.

L-street Bridge (over Reserved Channel, South Boston).

This is a wooden pile bridge with an iron retractile draw. It was built in 1892. Some of the piling in the fender-guard and under the 6-foot walk needs renewal; one of the side-walks on the draw should be replanked; the planking on the waterways and piers needs patching.

Leverett Pond Foot-bridge (in Leverett Park).

This is a segmental masonry arch of 24 feet span and 5 feet 5 inches rise. It was built in 1894, and is maintained by the Park Department.

Linden Park-street Bridge (over Stony Brook).

This is a wooden bridge built in 1886, and at that time was considered a "temporary" structure. The timber in the trusses and floor beams is now badly decayed and should be renewed at once or a new bridge built.

Longwood-avenue Bridge (over Muddy River and Boston & Albany R.R.).

The original wooden structure was built in 1857, and rebuilt in 1877. The present masonry arches were erected in 1899 by the Park Departments of Boston and Brookline, and are maintained jointly by them.

Malden Bridge (from Charlestown to Everett).

This a wooden pile bridge with a retractile steel draw, and was rebuilt in 1900-01. The entire bridge, except below

the draw has been painted, and ordinary repairs have been made; the planking on the draw needs repairing, and about 50 feet of fence should be built on the wing of the abutment at the Charlestown end. Otherwise it is in good condition.

Massachusetts-avenue Bridge (over Boston & Albany R.R.).

This is an iron bridge, built in 1876. It was thoroughly repaired in 1893, with the exception of the wooden fences. These should be rebuilt; otherwise the bridge is in fair condition for so old a structure.

Massachusetts-avenue Bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1876. The woodwork was renewed in 1901, and the ironwork cleaned and painted. The planking on both sidewalks is very thin and should be renewed and the whole bridge painted. The bridge is one of the older bridges and is too light for present traffic.

Mattapan Bridge (from Dorchester to Milton).

This is a three-arch bridge of Melan construction, with granite facing. It was built in 1902 by the Metropolitan Park Commission, and is maintained by it. The arches are semi-circular, two spans being 14 feet and one 50 feet; the bridge has one 56-foot roadway and two 12-foot sidewalks. It is in good condition.

Meridian-street Bridge (from East Boston to Chelsea).

This is a wooden pile bridge, with a wooden turn-table draw on a pile foundation. The original structure was built in 1858. It was rebuilt soon afterwards, and was widened and rebuilt in 1884, excepting the draw, which was built in 1875-76. The chords of the draw were rebuilt in 1896.

The bridge needs general repairing; the caps should be rebolted to the piles; some of the curb stringers, and stringers at the Boston end of the channel and the tops of some piles are somewhat decayed and need strengthening; the roadway planking has begun to decay; some fence posts are badly split; the waterway, the planking on the pier and wharf, the fascia on the sidewalk and the painting are in poor condition; the draw should be set up and some of the upper angle blocks and roadway stringers need renewing; the track is much worn.

Milton Bridge (from Dorchester to Milton).

✓ The city maintains the part within its limits. The original structure is very old. It was widened in 1871-72. The older part of this bridge was built of stone, and the widening is an iron structure on stone columns. The westerly sidewalk was rebuilt on new iron girders and floor beams in 1900. The bridge should be painted, and the sidewalk planking on the down-stream side of the bridge should be renewed in part; one of the cap-stones over the first water-way is cracked.

Mt. Washington-avenue Bridge (over Fort Point Channel).

This is a wooden pile bridge with an iron draw. It was built in 1854, and rebuilt in 1870-71. It has been closed to travel since the summer of 1904.

Neponset Bridge (from Dorchester to Quincy).

The city maintains the part within its limits. The original structure was built in 1802, and the present one in 1877. The draw is too heavy to be handled by hand, and should be replaced by a turn-table draw. General repairs have been made. The bridge needs general overhauling. The up-stream draw-arm is bent and should be repaired; the down-stream pier and fender-guards need extensive repairs; the blocking, hinges, planking, stringers near the gudgeons and gears, the decking of the draw, the sidewalk planking, and the bearing-plate at the abutment are in poor condition, and should be renewed.

Neptune-road Bridge (over Boston, Revere Beach & Lynn R.R.).

This is an iron bridge, built in 1887-88, and is maintained by the Park Department. The roadway and sidewalk planking should be renewed, and the bridge should be painted.

Newton-street Bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron bridge, built in 1872. It was cleaned and painted in 1902 and a new deck put on. The fences are poor, but otherwise the bridge is in a good condition for so old a structure.

Norfolk-street Bridge (over Midland Division, New York, New Haven & Hartford R.R., near Dorchester Station).

This is a new steel bridge built in 1905, under an agreement between the city and the N. Y., N. H. & H. R.R. Co. It is in good condition, but the adjoining temporary fences should be replaced by permanent ones.

Norfolk-street Bridge (over Midland Division, New York, New Haven & Hartford R.R., near Mattapan Station).

This is a through lattice-girder bridge, and was built by the railroad company in 1902.

The surface of the bridge is maintained by the city, and the rest of the structure by the railroad company. The bridge is in good condition.

North Beacon-street Bridge (from Brighton to Watertown).

The city maintains the part within its limits. This is a wooden pile bridge with a wooden leaf draw. The original structure was built in 1822, and the present one in 1884. The draw has been repaired; three draw arms, the header and the planking were renewed; three stringers and the planking at the rear of the draw were renewed, and the pier was replanked. Some of the piles are decaying and need reinforcing; the roadway planking needs patching and the parapet should be raised.

North Harvard-street Bridge (from Brighton to Cambridge).

This bridge was originally built in 1662, and was rebuilt, except the piling, in 1879; the draw was built in 1891. The bridge is in the care of the Commissioners for the Boston and Cambridge Bridges; the city pays one-half the cost of maintenance. The bridge is in poor condition, and should be rebuilt and replaced by a wider structure, more in keeping with the improvements recently made in the vicinity.

Oakland-street Bridge (over Midland Division, New York, New Haven & Hartford R.R.).

This is a new steel-plate girder bridge, built by the railroad company in 1902 under the decree of the Superior Court abolishing the grade crossing at this point. The surface of the bridge is maintained by the city and the rest of the structure by the railroad company. It is in good condition.

Perkins-street Foot-bridge (over the Boston & Maine R.R. and Boston & Albany R.R. in Charlestown).

This bridge was built in 1900, and opened to travel February 2, 1901; it has two spans of wooden stringers and one of steel Pratt trusses. The surface is maintained by the city, the rest of the structure by the railroad companies. Some of the planking needs renewal; otherwise it is in good condition.

Prison Point Bridge (from Charlestown to Cambridge).

This bridge was originally built in 1833, and was rebuilt in 1876-77. The operation of the draw is in the care of the Commissioners for the Boston and Cambridge Bridges, the city paying one-half the cost.

This bridge is to be replaced by a new one to be built at a higher grade to abolish the numerous grade crossings, the work to be done by the Boston & Maine Railroad. The Charlestown end of the new bridge is partially built, and a temporary wooden bridge connects the new work with the Cambridge end, and is kept in repair by the Boston & Maine Railroad.

No work of importance has been done on the permanent structure during the past year.

Public Garden Foot-bridge.

This is an iron bridge. It was built in 1867, and is now in good condition.

Scarboro' Pond Foot-bridge (in Franklin Park).

This is an elliptical masonry arch of 40 feet span and 8 feet 3 inches rise. It was built in 1893, and is maintained by the Park Department.

Shawmut-avenue Bridge (over Boston & Albany R.R. and Providence Division, New York, New Haven & Hartford R.R.).

The original bridge built in 1871 was removed and a new through plate girder bridge erected in 1904. The bridge is now in good condition.

Southampton-street Bridges (over South Bay Sluices).

These are wooden bridges, built in 1875 as temporary structures; they are in poor condition, and should be rebuilt.

New sidewalks and fences have been built on the easterly bridge and a few stringers have been added on the down-stream side of the roadway, and some repairs have been made on the westerly bridge. The bulkheads are in very poor condition; additional bracing and stringers are needed on both bridges.

Southampton-street Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

This is a steel plate girder bridge, built in 1901-02. The surface is maintained by the city, the rest of the structure by the railroad company. The bridge should be painted; otherwise it is in good condition.

Spring-street Bridge (from West Roxbury to Dedham).

This is a stone bridge. The city maintains the part within its limits. The piers and arches have been pointed during the year, and granite copings, surmounted by iron railings, have been built on both sides of the bridge for the length supported by the City of Boston. The part within the city's limits is in good condition.

Summer-street Bridges (over A, B and C streets).

These bridges were built in connection with the abolition of the grade crossing on Congress street, and were opened to travel in 1900. The bridge over A street is a steel deck plate girder structure, with a paved roadway of granite blocks and asphalt sidewalks. A flight of iron stairs leading to the street below has been built during the year.

The bridge over B street is a through plate girder structure, with a paved roadway of granite blocks and asphalt sidewalks.

The bridge over C street is a two-span steel-beam structure, with brick and concrete arches turned between the beams; the roadway is paved with granite blocks and the sidewalks with asphalt.

These bridges are all in good condition, except the railings, which should be painted on all the bridges. The girders of the bridges over B and C streets should be painted soon and the stairway at B street should be painted at once.

Summer-street Bridge (over Fort Point Channel).

This bridge was built in 1899-1900, in connection with the abolition of the grade crossing on Congress street. It is

a four-span deck plate girder bridge, resting on masonry piers, with two retractile draws, over a 50-foot channel-way. The roadway of the fixed spans has a granite block paving, and the sidewalks have asphalt wearing surfaces. The whole structure is in good condition, but should be painted during the year.

Summer-street Bridge (over New York, New Haven & Hartford Railroad Freight Tracks).

This bridge was built in 1900, in connection with the abolition of the grade crossing on Congress street, and is maintained by the city and the railroad company, the former maintaining the wearing surface and the latter maintaining the rest of the structure. It has four spans, consisting of three through trusses each, and has a granite-paved roadway and asphalt sidewalks. It is in good condition, except the railings, which are badly rusted and should be painted.

Warren Bridge (from Boston to Charlestown).

This is a wooden pile bridge, with a double retractile iron draw. The present structure was built in 1883-84. Some of the piles under the wharf are broken; some of the fender-guards are in poor condition; the Charlestown end has been repaved; the planking on the waterway and in the draw pit, the piling at two corners of the waterway and the tail track timber need repairing; the landing shoes should be reset; the sidewalk on the westerly side of the bridge, city end, should be extended about twenty feet, and the concrete sidewalks should be repaired; the curb on the draw should be realigned, and some of the fence posts need renewal. The down-stream fender-guard on the Boston side has been rebuilt.

West Boston Temporary Bridge (from Boston to Cambridge).

This bridge was built in 1898-99 to accommodate the travel using West Boston bridge till the Cambridge bridge should be built; the city pays one-half the cost of maintenance. Considerable part of the lower planking has been renewed; the remainder is in poor condition and needs renewal in part. It will probably be in commission about a year longer.

West Fourth-street Bridge (over Old Colony Division, New York, New Haven & Hartford R.R.).

In 1893-94 the grade crossing of the Old Colony Railroad on this street was abolished, and an iron bridge built, extend-

ing from the end of Dover-street bridge, at the South Boston side of Fort Point channel, to the easterly line of Foundry street. The surface is maintained by the city, the rest of the structure by the railroad company. The planking around the middle trusses needs renewal, the bridge needs painting, and the sidewalk plank needs patching.

West Rutland-square Foot-bridge (over Providence Division, New York, New Haven & Hartford R.R.).

This is an iron foot-bridge, built in 1882. It is now in good condition, with the exception of the stair treads, which are badly worn.

Western-avenue Bridge (from Brighton to Cambridge).

The present bridge was built in 1879-80, and the draw in 1891. It is in the care of the Commissioners for the Boston and Cambridge Bridges, and the city pays one-half the cost of maintenance. The Cambridge end of the bridge is in fair condition, the Boston end in rather poor condition, some of the piles and stringers needing renewal; the piers and waterways need repairing.

Western-avenue Bridge (Brighton to Watertown).

The city maintains the part within its limits. This is a wooden pile bridge, with an iron draw, and was rebuilt in 1892-93. Only minor repairs have been made; the Boston end of the draw should be raised; the draw should be adjusted; and the bearings under the ends of the girders should be renewed; the planking and capsills on the piers and along the waterways should be repaired; some of the spurshores are broken and should be refitted; the deck planking on draw and main bridge needs renewal, and the bridge needs painting; some of the piles in the fender-guard are in poor condition.

Winthrop Bridge (from Breed's Island to Winthrop).

This is a pile bridge without a draw. It was originally built in 1839; it was rebuilt in 1851, and was extensively repaired in 1870 and has been repaired many times since. The abutment at the Winthrop end needs pinning up, as there has been some settlement; the bulkhead at the Boston end and some of the outside bolsters are in poor condition; the bridge will soon need rebuilding.

Wood Island Park Foot-bridge.

This is a steel foot-bridge, built in 1898-99, and connects Prescott street, East Boston, with Wood Island Park, spanning the tracks of the Boston, Revere Beach & Lynn R.R. The walls need pointing, the bridge should be painted, as the steel work is very rusty, and the plank needs repairing.

Bridges wholly Supported by Railroad Corporations.

The highway bridges maintained by the several railroad companies are in good or fair condition.

SURVEYING DIVISION.

The work of the Surveying Division during the past year has consisted of the making of such surveys and plans as have been required by the several city departments, and giving lines and grades of public streets when requested by abutters intending to build.

Eighty-three petitions requesting that catch-basins should be constructed were reported upon to the Sewer Division.

Catch-basin locations were furnished the Sewer Division for seventy-six streets advertised to be regulated by the Superintendent of Streets.

On request of the Sewer Division, thirty-three plans of streets showing proposed locations of future catch-basins were furnished.

For eleven East Boston streets, locations for catch-basins, made necessary by the abolition of grade crossings, were furnished the Sewer Division.

One hundred and sixty-four catch-basins were staked out and duplicate sketches, showing locations and ties, were sent to the Sewer Division.

One hundred and seventy-one plans of proposed underground pipes, conduits, etc., were examined, and proposed future catch-basins located thereon for the Permit Division.

One hundred and eighty notices of contracts to lay artificial stone sidewalks were received and reported upon to the Paving Division. In sixty-eight cases the Paving Division was notified that the existing edgestone should be reset, preparatory to the laying of artificial stone sidewalks.

Twenty-four petitions to make sidewalk openings were received from the Paving Division and reported upon.

Ninety-seven requests for edgestone were examined and amount of curb required reported to the Paving Division.

Grade heights were furnished engineers and architects for estates on twenty-four streets.

Nineteen plans of streets were made for sidewalk assessments on request of the Paving Division. Data was also furnished the Paving Division for sidewalk assessments on four estates.

Estimates for grade, land and building damages and cost of construction were furnished the Street Commissioners on the following streets :

Centre street, Roxbury. Marcella street to Highland street.
Cottage street, Charlestown. Bunker Hill street to Medford street.
Dawson street, Dorchester. Templeton street to Mallet street.
Dorchester avenue, South Boston. Atlantic-avenue extension to Old Colony avenue.
Granite street, South Boston. Mt. Washington avenue to Congress street.
Hyde Park avenue, West Roxbury. Ashland street to the Hyde Park line.
New street, East Boston. Chelsea street to Bremen street.
Old Colony avenue, South Boston. Dorchester avenue to Mt. Vernon street.
Old Colony Boulevard, Dorchester. Mt. Vernon street to King square.
Proposed new street, East Boston. Chelsea street to Bremen street.
West Broadway, South Boston. Northerly corner of Dorchester street.

The lines and grades of the following sixteen streets, for which the Street Commissioners were petitioned for authority to open as private ways, were examined and reported upon:

Cameron street, Dorchester. From Dorchester avenue westerly.
Case street, West Roxbury. From Centre street north-westerly.
Charlemont street, Dorchester. Oak avenue to Minot street.
Chelmsford street, Dorchester. Adams street to Charlemont street.
Dane street, West Roxbury. Case street to Holbrook street.
Delmont street, Dorchester. Adams street to Sunapee street.
Estrella street, Roxbury. Priesing street to Centre street.
Franconia street, Dorchester. Adams street to Charlemont street.
Haverford street, West Roxbury. Extension to Baker court.
Mission street, Roxbury. Calumet street to Parker Hill avenue.
Montello-road extension, West Roxbury. Washington street to Brookside avenue.
Priesing street, Roxbury. Chestnut avenue to Mozart street.
Saranac street, Dorchester. Adams street to Minot street.
Sunapee street, Dorchester. Oak avenue to Franconia street.
Verona street, West Roxbury. Child street to Carolina avenue.
Wellington road, Dorchester. Magnolia street to Magnolia street.

Nineteen miscellaneous reports were made to the Paving Division.

Seven miscellaneous reports were made to the Sewer Division.

Two plans have been made for the Schoolhouse Commission of property to be taken for school purposes, as follows, viz.: Dunreath street, Roxbury, for addition to the Roxbury High School, and Ambrose street, Roxbury, for an addition to the Dearborn School.

A plan was made for the Park Department for the purpose of establishing a building line on the Riverway near Brookline avenue.

Twenty-nine plans have been made showing changes in street lines and grades in East Boston, on account of the abolition of grade crossings.

An assessment plan of Columbia road, in nineteen sections, has been made for the Street Commissioners.

Seven plans and profiles representing a total length of nine-tenths of a mile, showing buildings, property owners' names, established grades, areas of land taken, or to be taken, for street widenings, relocations, or to be laid out, were completed for the Street Laying-out Department.

The following list gives the number of orders attended to for property owners, builders, and the various city departments, from February 1, 1905, to February 1, 1906:

Street lines given	464
Street grades given	233
Street Department, Paving Division	1,691
Street Department, Sewer Division	561
Street Department, Bridge Division	1
Building Department	216
Public Buildings Department	1
Public Grounds Department	1
Law Department	151
Street Commissioners	101
Engineering Department	114
Park Department	6
Board of Health	3
Police Department	7
Cemetery Department	3
Schoolhouse Commission	33
City Messenger Department	3
Insane Hospital Department	1
Institutions Department	1
Assessing Department	1
City Hospital Department	1
Mayor	1

3,594

In connection with the Surveying Division there have been 1,102 titles examined, 852 deeds and 272 plans copied from the Registry of Deeds.

Thirty-seven hundred and forty-nine blue prints have been made during the year.

List of plans made for sewerage works during the year ending February 1, 1906 :

EAST BOSTON.

Trumbull street, and Addison street, in rear of Saratoga street.

ROXBURY.

Worthington-street outlet, between Brookline avenue and Worthington street.

WEST ROXBURY.

Addington-road extension to Walker street.

Ashland street, from Ashland street to Stony brook.

Central street, at Central station.

Neponset-avenue outlet, between Neponset avenue and Mt. Hope street.

DORCHESTER.

Brook-avenue place, from Brook avenue to Dorchester brook taking.

Conley street and Norwood street, from Tolman street to Freeport street.

Hollingsworth street, from Hollingsworth street to Rosewood street.

Kingsdale street, from Kingsdale street to Wales-street extension.

Talbot-avenue high level sewer, between Don street and Lyons street.

BRIGHTON.

Hunnewell avenue, from Champney street to Newton line.

The following list gives the sewerage works staked out during the year ending February 1, 1906 :

EAST BOSTON.

Boardman street, from Saratoga street westerly.

ROXBURY.

Bainbridge street to Kingsbury street old taking.

DORCHESTER.

Davenport brook, from Burt avenue to Washington street.

Moseley avenue, from Moseley avenue to Columbia road.

Norwood-street extension, from Norwood street to Freeport street.

Talbot-avenue high level sewer, from Don street to Lyons street.

Wales-street extension, from Kingsdale street to Talbot avenue.

WEST ROXBURY.

Florence-street brook, at Sycamore street.

Gilman street, from Gilman street to Stony brook.

Neponset-avenue branch, from Neponset avenue to Mt. Hope street.

Neponset-avenue branch, from Board of Survey street No. 1976.

Roslindale branch, Wright, Hawthorne and Heathcote streets.

Roslindale branch, from Sycamore street to Ashland street.

Stony brook, at Washington street. Meehan's land.

Talbot-avenue high level sewer, at Mt. Hope street.

The following table gives the comparative annual amounts of paving work measured by the Surveying Division of the Engineering Department for twelve years:

YEAR ENDING JANUARY 31.	Feet of Edge- stone Set.	Square Yards Block-stone Paving and Crossings.	Square Yards Round-stone Paving.	Square Yards Brick Paving.	Square Yards Artificial Stone.	Square Yards Coal Tar Concrete.	Square Yards Asphalt Paving.
1895.....	23,487	12,007	5,175	6,168	3,962	11,738	1,406
1896	129,383	60,472	32,940	68,701	12,296	183	1,297
1897.....	120,158	64,952	24,976	68,178	13,471	2,971	394
1898.....	154,718	100,414	36,658	94,003	13,599	4,019	27
1899.....	76,991	56,541	14,249	43,930	11,652	1,619	.....
1900.....	86,354	60,803	17,323	48,946	14,221	789	16
1901.....	264,982	161,428	61,356	147,863	16,541	489	2,377
1902.....	245,410	188,041	30,324	131,487	15,565	698	.....
1903.....	104,133	135,310	5,077	59,051	14,119	25	.....
1904.....	60,555	65,474	4,815	29,078	12,806	248	62
1905.....	30,899	54,455	184	16,268	9,906	196	.....
1906.....	67,114	65,132	1,264	27,544	12,981	3,551	.....

Table showing the amount of paving work measured by the Surveying Division for the year ending January 31, 1906, by districts:

DISTRICTS.	Cubic Yards Earth Excavation.	Cubic Yards Rock Excavation.	Linear Feet of Artificial Stone Curb.	Square Yards Artificial Stone Side-walk.	Feet of Edgestone Set.	Square Yards Block-stone Paving and Crossing.	Square Yards Round-stone Paving.	Square Yards Brick Paving.	Square Yards Coal Tar Concrete.	Square Yards Flags.
City Proper.....				4,146	8,690	12,141	.....	5,784	.....	.....
South Boston.....				936	11,170	12,366	.....	6,108	.....	.....
East Boston.....					3,213	4,033	39	2,719	.....	.....
Charlestown.....				140	2,128	5,167	.....	1,233	.....	.....
Roxbury.....				2,004	18,440	13,299	.....	8,012	.....	.....
Dorchester.....	19.5	24.7	37.6	4,711	17,167	14,022	17	3,683	384	189
West Roxbury.....				321	6,298	2,286	1,208	.....	1,243	....
Brighton.....				723	8	1,818	.....	.....	1,924	....
Totals.....	19.5	24.7	37.6	12,981	67,114	65,132	1,264	27,544	3,551	189

Table showing the amount of paving work measured by the Surveying Division for the year ending January 31, 1906, by months :

MONTHS.	Cubic Yards Earth Excavation.	Cubic Yards Rock Excavation.	Linear Feet of Artificial Stone Curb.	Square Yards Artificial Stone Side-walk.	Feet of Edgestone Set.	Square Yards Block-stone Paving and Crossing.	Square Yards Round-stone Paving.	Square Yards Brick Paving.	Square Yards Coal Tar Concrete.	Square Yards Flags.
April.....				67	.....	.....	.....	.....	.....	....
May.....				1,053	2,071	2,052	.....	1,368	.....	....
June.....	19.5	18.7	20.2	776	9,637	7,920	17	5,659	.....	90
July.....		6.0		963	19,002	23,859	511	7,479	217	96
August.....				2,586	12,250	15,629	704	5,233	.....	3
September.....				1,613	6,548	6,117	.....	1,752	167	....
October.....				2,353	5,290	1,978	.....	485	.....	....
November.....			17.4	1,719	3,904	3,598	.....	3,348	1,243	....
December.....				1,851	8,412	3,984	32	2,220	1,924	....
Totals.....	19.5	24.7	37.6	12,981	67,114	65,132	1,264	27,544	3,551	189

As a matter of record, the following list is given of the work done for the Paving Division of the Street Department from February 1, 1905, to February 1, 1906 :

BOSTON PROPER.

(North of Massachusetts avenue.)

- Albany street*, East Canton street to East Dedham street. Grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- Albany street*, westerly corner Dedham street. Line and grade for edgestone tested and measurement of sidewalk paving.
- Beach street*, southeasterly side, Washington street to Knapp street. Grade of edgestone tested and line and grade for edgestone.
- Beacon street*, Nos. 152 and 154. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Beacon street*, No. 260. Grade of edgestone tested and grade for inside.
- Beacon street*, Nos. 265 to 289 and 266 to 270. Line and grade for edgestone and measurement of edgestone and sidewalk paving.
- Beacon street*, No. 275. Measurement of sidewalk paving.
- Beacon street*, Exeter street to Fairfield street, both sides. Grade for edgestone. Measurement of edgestone and sidewalk paving on south side only.
- Beacon street*, Nos. 424-426. Grade of edgestone tested and measurement of sidewalk paving.
- Beacon street*, No. 482. Grade for edgestone, grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Blackstone street*, Nos. 13-14. Grade of sidewalk tested for area.
- Blackstone street*, No. 19. Grade of edgestone tested for area.
- Boylston street*, Nos. 218-222. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Boylston street*, No. 647. Grade of edgestone tested and measurement of sidewalk paving.
- Boylston street*, southerly corner Gloucester street. Grade for edgestone, grade of edgestone tested and grade for inside.
- Boylston street*, southeasterly corner Massachusetts avenue. Line and grade for edgestone, grade of edgestone tested and measurement of sidewalk paving.
- Broad street*, Nos. 40-42. Grade of edgestone tested, grade for edgestone and measurement of sidewalk paving.
- Broadway*, at Curve street. Measurement of edgestone, roadway and sidewalk paving.
- Change avenue*. Grade for sidewalk and measurement of sidewalk paving.
- Chardon street*, northerly corner Green street. Grade for edgestone, grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Chestnut street*, No. 68. Grade of edgestone tested and grade for inside for area.

- Church street*, northeasterly side, Tennyson street to Columbus avenue. Line and grade for edgestone, grade of edgestone tested and grade for inside.
- Columbus avenue*, easterly side, Church street to Eliot street. Line and grade for edgestone, grade of edgestone tested and grade for inside.
- Columbus avenue*, No. 350 to 356. Grade of edgestone tested (twice), grade for edgestone, grade for inside and measurement of sidewalk paving.
- Columbus avenue*, westerly corner Holyoke street. Grade of edgestone tested (twice), grade for edgestone, grade for inside, and measurement of sidewalk paving.
- Compton street*, at Village street. Measurement of roadway paving.
- Compton street*, at Middlesex street. Measurement of roadway paving.
- Congress street*, southwesterly corner Milk street. Measurement of sidewalk paving.
- Cotting street*, westerly corner Lowell street. Grade for edgestone, grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Curve street*. Grade for edgestone and measurement of edgestone, gutter, crosswalk and sidewalk paving.
- Dartmouth street*, southerly corner Columbus avenue. Grade of edgestone tested (twice), grade for edgestone, grade for inside and measurement of sidewalk paving.
- Dartmouth street*, Nos. 82 to 86. Grade of edgestone tested, grade for edgestone and measurement of sidewalk paving.
- Dock square*, Nos. 21-23. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- East Dedham street*, at Albany street. Line and grade for edgestone, and measurement of edgestone, roadway and sidewalk paving.
- East Dedham street*, westerly corner Albany street. Line and grade for edgestone tested and measurement of sidewalk paving.
- Eliot street*, southerly side, Columbus avenue to Pleasant street. Line and grade for edgestone, grade of edgestone tested and grade for inside.
- Endicott street*, No. 99. Grade of edgestone tested and grade for inside for area.
- Essex street*, northeasterly side, Washington street to Harrison avenue. Grade for edgestone, grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Fairfield street*, No. 20. Grade of edgestone tested (twice), grade for edgestone, grade for inside and measurement of sidewalk paving.
- Fairfield street*, No. 22. Grade of edgestone tested (twice), grade for edgestone, revised grade for edgestone, grade for inside and measurement of sidewalk paving.

- Faneuil Hall square*, No. 28. Measurement of sidewalk paving.
- Fayette street*, Pleasant street to No. 16. Measurement of edgestone, roadway and sidewalk paving.
- Federal street*, southeasterly corner Milk street. Measurement of sidewalk paving.
- Federal street*, at John Hancock building. Grade for sidewalk tested for area.
- Fruit street*, Charles street to North Grove street. Grade for edgestone.
- Gloucester street*, northerly corner Public Alley No. 431. Grade of edgestone tested (twice), grade for edgestone, grade for inside and measurement of sidewalk paving.
- Gloucester street*, southerly corner Boylston street. Grade for edgestone, grade of edgestone tested and grade for inside.
- Green street*, northerly corner Chardon street. Grade for edgestone, grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Hanover street*, southerly corner Union street. Line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Harrison avenue*, northerly corner Essex street. Grade for edgestone, grade for inside and grade of edgestone tested.
- Harrison avenue*, westerly corner Hayward place. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Harrison avenue*, Nos. 2 to 12. Measurement of sidewalk paving.
- Hawley street*, Nos. 24 to 26. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Hawley street*, northerly corner Summer street. Grade of edgestone tested and grade of sidewalk for area.
- Hayward place*, southwesterly corner Harrison avenue. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Hayward place*, southerly corner Washington street. Grade of edgestone tested (twice), grade for inside and part measurement of sidewalk paving.
- Hayward place*, Nos. 12 to 24. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Hingham street*, at Middlesex street. Measurement of edgestone, roadway and sidewalk paving.
- Holyoke street*, westerly corner Columbus avenue. Grade of edgestone tested (twice), grade for edgestone, grade for inside and measurement of sidewalk paving.
- Hudson street*, at Curve street. Measurement of edgestone, roadway and sidewalk paving.
- Jefferson street*, measurement of edgestone, roadway and sidewalk paving.
- Kilby street*, No. 79. Grade of edgestone tested and measurement of sidewalk paving.
- Lincoln street*, No. 20. Grade of sidewalk for area.

- Massachusetts avenue*, northerly corner Belvidere street. Measurement of sidewalk paving.
- Massachusetts avenue*, southeasterly corner Boylston street. Line and grade for edgestone, grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Middlesex street*, Compton street to Hingham street. Measurement of edgestone, roadway and sidewalk paving.
- Milk street*, southerly side, Federal street to Congress street. Measurement of sidewalk paving.
- North street*, Nos. 378 and 382. Grade of edgestone tested, line and grade for edgestone, line and grade for edgestone tested and grade for inside.
- North Bennet street*, southerly corner Salem street. Grade for edgestone, grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- North Margin street*, Nos. 53 to 59. Measurement of sidewalk paving.
- Pembroke street*. Line and grade for edgestone and measurement of edgestone, gutter and sidewalk paving.
- Pembroke street*, No. 14. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Pitts street*, Nos. 71 to 73, to Merrimac street. Grade for edgestone for area.
- Pleasant street*, northwesterly side, Eliot street to Tennyson street. Line and grade for edgestone, grade of edgestone tested and grade for inside.
- Poplar street*, No. 22. Measurement of sidewalk paving.
- Providence street*, at Park square. Grade of edgestone tested (twice), grade for edgestone, grade for inside and measurement of sidewalk paving.
- Public alley No. 426*, northerly and easterly corners Fairfield street. Grade of edgestone tested and grade for inside.
- Public alley No. 431*, northerly corner Gloucester street. Grade of edgestone tested, grade for edgestone and measurement of sidewalk paving.
- Salem street*, northerly corner North Bennet street. Grade of edgestone tested, line and grade for edgestone and measurement of sidewalk paving.
- Shawmut avenue*, West Springfield street to Massachusetts avenue. Grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- South Market street*, Commercial street to Atlantic avenue. Grade for edgestone.
- Stanhope street*, No. 50. Grade of edgestone tested and grade for edgestone.
- Staniford street*, opposite Lyman street. Grade for area.
- Summer street*, northerly corner Hawley street. Grade of edgestone tested and grade of sidewalk for area.
- Thacher street*, Nos. 6 to 12. Measurement of sidewalk paving.
- Temple place*, No. 56. Grade of edgestone tested and measurement of sidewalk paving.

- Tennyson street*, northerly side, Pleasant street to Church street. Line and grade for edgestone, grade of edgestone tested and grade for inside.
- Tremont street*, southerly corner Hamilton place. Measurement of sidewalk paving.
- Tremont street*, No. 125. Measurement of sidewalk paving.
- Tremont street*, No. 139. Measurement of sidewalk paving.
- Tremont street*, No. 153. Grade of edgestone tested, grade of sidewalk for area and measurement of sidewalk paving.
- Tremont street*, No. 177. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Tremont street*, at Jefferson street. Measurement of edgestone, roadway and sidewalk paving.
- Union street*, southerly corner Hanover street. Line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Village street*, Castle street to Dover street. Line and grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- Washington street, North*, No. 126. Measurement of sidewalk paving.
- Washington street*, Nos. 205 to 211. Measurement of sidewalk paving.
- Washington street*, northerly corner West street. Measurement of sidewalk paving.
- Washington street*, southeasterly side, Hayward place to Essex street. Grade for inside and measurement of sidewalk paving.
- Washington street*, Nos. 820 to 824. Grade of edgestone tested, grade for inside for area.
- West street*, northerly corner Washington street. Measurement of sidewalk paving.
- West Cedar street*, westerly side, Cambridge street to Revere street. Grade for edgestone.
- Yarmouth street*, No. 12. Grade of sidewalk tested for area.

SOUTH BOSTON.

- Acadia street*, East First street to East Second street. Line and grade for edgestone.
- Colton street*, West First street to West Second street. Grade of edgestone tested, line and grade for edgestone, and measurement of edgestone, roadway and sidewalk paving.
- Columbia road*, Nos. 1788-1794. Street line given, grade for inside, pitch of artificial stone sidewalk tested, and measurement of sidewalk paving.
- East Eighth street*, Nos. 458-482. Estimate of amount of edgestone required and line and grade for edgestone.
- East Ninth street*, northwest corner of L street. Line and grade of edgestone tested (twice), grade for inside, pitch of artificial stone sidewalk tested, and measurement of sidewalk paving.

- East Second street*, L street to M street. Measurement for assessment and plan for sidewalk assessment.
- East Seventh street*, Nos. 697-699. Estimate of amount of edgestone required and line and grade for edgestone.
- East Sixth street*, I street to K street. Line and grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- G street*, East Eighth street to Columbia road. Measurement to locate old curb, etc., measurement for assessment and plan for sidewalk assessment.
- Gustin street*, West Ninth street to Old Colony avenue. Measurement to locate old curb, etc., line and grade for edgestone, measurement for assessment, plan for sidewalk assessment, and measurement of edgestone, roadway and sidewalk paving.
- K street*, East Ninth street to Columbia road. Measurement to locate old curb, etc., measurement for assessment and plan for sidewalk assessment.
- L street*, northwest corner of East Ninth street. Line and grade of edgestone tested (twice), grade for inside, pitch of artificial stone sidewalk tested, and measurement of sidewalk paving.
- M street*, Nos. 209-219. Line and grade of edgestone tested (twice), line and grade for edgestone, grade for inside, pitch of artificial stone sidewalk tested, and measurement of sidewalk paving.
- Melcher street*, southeast corner Summer street. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, grade for inside, pitch of artificial stone sidewalk tested, and measurement of sidewalk paving.
- Mercer street*, East Eighth street to East Ninth street. Measurements to locate old curb, etc., line and grade for edgestone, measurement for assessment, plan for sidewalk assessment and measurement of edgestone, roadway and sidewalk paving.
- Mercer street*, East Ninth street to Vale street. Line and grade for edgestone.
- Mercer street*, Vale street to Columbia road. Measurements to locate old curb, etc., line and grade for edgestone, measurement for assessment, plan for sidewalk assessment and measurement of edgestone, roadway and sidewalk paving.
- Monks street*, southeast corner of East Sixth street. Estimate of amount of edgestone required and line and grade of edgestone tested.
- O street*, northwest corner Columbia road. Grade of edgestone tested and line and grade for edgestone.
- Preble street*, Dorchester avenue to Old Colony avenue. Line and grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- Q street*, No. 41. Line and grade of edgestone tested, line and grade for edgestone, grade for inside, pitch of artificial stone sidewalk tested, and measurement of sidewalk paving.

- Q street*, No. 53. Line and grade of edgestone tested (twice), grade for inside, pitch of artificial stone sidewalk tested and measurement of sidewalk paving.
- Q street*, No. 55. Line and grade of edgestone tested, grade for inside, pitch of artificial stone sidewalk tested, and measurement of sidewalk paving.
- Silver street*, E street to F street. Line and grade for edgestone (twice) and measurement of edgestone, roadway and sidewalk paving.
- Silver street*, F street to Dorchester street. Line and grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- Summer street*, southeast corner Melcher street. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, grade for inside, pitch of artificial stone sidewalk and measurement of sidewalk paving.
- Thomas park*, near South Boston High School. Estimate of amount of edgestone required.
- Vale street*, Dorchester street to Columbia road. Measurement to locate old curb, etc., line and grade for edgestone, measurement for assessment, plan for sidewalk assessment and measurement of edgestone, roadway and sidewalk paving.
- West First street*, Dorchester avenue to Granite street. Line and grade for edgestone, grade for gutters and measurement of edgestone, roadway and sidewalk paving.
- West First street*, Granite street to A street. Line and grade for edgestone, grade for gutters, grade for tracks and measurement of edgestone, roadway and sidewalk paving.
- West Seventh street*, Dorchester avenue to C street. Line and grade for edgestone and measurement of edgestone, roadway and sidewalk paving.

EAST BOSTON.

(Including Breed's Island.)

- Boardman street*, between Boston & Maine railroad and Saratoga street. Line and grade for regulating street.
- Bremen street*, Nos. 210 to 220. Line and grade for setting edgestone.
- Bremen street*, Nos. 202-204. Estimate of edgestone required and line and grade for setting edgestone.
- Condor street*, No. 195. Measurement for assessment.
- Falcon street*, Nos. 180-182. Estimate of edgestone required and line and grade for setting edgestone.
- Leyden street*, Nos. 240 to 244. Line and grade for setting edgestone.
- Marion street*, at James Otis School. Line and grade for setting edgestone.
- Maverick street*, No. 301. Estimate of edgestone required and line and grade for setting edgestone.

Maverick street, Nos. 244 to 254. Estimate of edgestone required and line and grade for setting edgestone.

Moore street, Nos. 110-112. Line and grade for setting edgestone.

Morris street, at James Otis School. Line and grade for setting edgestone.

Paris street, at James Otis School. Line and grade for setting edgestone.

Saratoga street, No. 851. Line and grade for setting edgestone.

Saratoga street, No. 839. Estimate of edgestone required.

Saratoga street, Nos. 250 to 264. Line and grade for setting edgestone.

Saratoga street, between Swift street and Moore street. Estimate of edgestone required, line and grade for resetting edgestone, and measurement of edgestone, crosswalk, roadway, driveway and sidewalk paving.

Shelby street, estimate of edgestone required, line and grade for resetting edgestone, and measurement of edgestone, crosswalk, roadway, driveway and sidewalk paving.

CHARLESTOWN.

Chelsea street, Mt. Vernon street to Vine street. Line and grade for resetting edgestone and measurement of edgestone, roadway and sidewalk paving.

Elm street, Bartlett street to Medford street. Line and grade for resetting edgestone.

Everett street, Bunker Hill street to Medford street. Line and grade for resetting edgestone.

Green street, at Main street. Line and grade of edgestone tested (twice), grade for edgestone, grade for inside, and measurement of sidewalk paving.

Henley street, Nos. 89-91-93. Line and grade of edgestone tested (twice), grade for edgestone, grade for inside, and measurement of sidewalk paving.

Lexington street, Bunker Hill street to Medford street. Line and grade for resetting edgestone.

Main street, Green street to Wood street. Line and grade of edgestone tested (twice), grade for edgestone, grade for inside, and measurement of sidewalk paving.

Mason street, Bow street to Front street. Line and grade for resetting edgestone.

Wood street, at Main street. Line and grade of edgestone tested (twice), grade for edgestone, grade for inside, and measurement of sidewalk paving.

ROXBURY.

(South of Massachusetts avenue.)

Akron street. Line and grade for edgestone and measurement of edgestone, gutter, crosswalk, and sidewalk paving.

- Ambrose street*, westerly corner Orchard Park street. Line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of edgestone and sidewalk paving.
- Ambrose street*, at Orchard Park street. Line and grade for edgestone.
- Atherton street*, No. 38. Grade of edgestone tested and measurement of sidewalk paving.
- Atherton street*, No. 52. Grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Atherton street*, northwesterly corner Amory street. Line and grade for edgestone.
- Bay State road*, No. 81. Grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Bay State road*, No. 127. Grade of edgestone tested (twice), grade for edgestone, grade for inside, and measurement of sidewalk paving.
- Bay State road*, Nos. 182-186. Grade of edgestone tested (twice), grade for edgestone, grade for inside, and measurement of sidewalk paving.
- Bellevue street*, No. 193. Line and grade for edgestone.
- Bickerstaff street*, Norway street to Haviland street. Line and grade for edgestone and measurement of edgestone, gutter, and sidewalk paving.
- Blue Hill avenue*, No. 312 to 384. Measurement of sidewalk paving.
- Boylston street*, at Brookline avenue. Grade for edgestone and measurement of edgestone and gutter paving.
- Brookline avenue*, northwesterly side, near Beacon street. Grade of edgestone tested, and measurement of sidewalk paving.
- Brookline avenue*, Beacon street to Burlington street. Grade for macadam.
- Brookline avenue*, Commonwealth avenue to Boylston street. Line and grade for edgestone, measurement for assessment, and measurement of edgestone, gutters, crosswalk, and sidewalk paving.
- Brookline avenue*, northerly corner Short street. Grade of edgestone tested (twice), grade for edgestone, and measurement of sidewalk paving.
- Calumet street*, Tremont street to No. 33. Measurement to locate old edgestone.
- Camden street*, No. 193. Measurement of sidewalk paving.
- Circuit street*, at Regent street. Measurement of sidewalk paving.
- Columbus avenue*, No. 1142 to 1164. Grade of edgestone tested, grade for edgestone, and measurement of sidewalk paving.
- Columbus avenue*, westerly corner Ritchie street. Grade of edgestone tested, line and grade for edgestone, line and grade of edgestone tested, and measurement of sidewalk paving.

- Crawford street*, Harold street to Waumbeck street. Line and grade for gutters.
- Cummington street*, No. 10. Measurement of sidewalk paving.
- Devon street*, No. 6. Grade of edgestone tested, and grade for inside.
- East Lenox street*, No. 82 to 92. Measurement of edgestone, gutter, and sidewalk paving.
- Fellows street*, East Lenox street to Northampton street. Line and grade for edgestone and measurement of edgestone, gutters, crosswalk, and sidewalk paving.
- Fountain street*, at Regent street. Measurement of edgestone, gutter, and sidewalk paving.
- Francis street*, Nos. 86-88. Measurement for assessment.
- Harold street*, No. 14. Line and grade for edgestone, line and grade of edgestone tested, and measurement of sidewalk paving.
- Harold street*, easterly corner Hollander street. Line and grade for edgestone tested and measurement of sidewalk paving.
- Harold street*, northwesterly side Ruthven street to Homestead street. Line and grade for edgestone and measurement for assessment.
- Harold street*, No. 225. Line and grade for edgestone tested and measurement of sidewalk paving.
- Harrishof street*. Line and grade for edgestone, measurement to locate old edgestone and measurement for assessment.
- Harrison avenue*, No. 860, to Northampton street. Measurement for assessment.
- Hartwell street*, westerly corner Georgia street. Line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Hemenway street*, northeasterly corner Westland avenue. Grade of edgestone tested and measurement of sidewalk paving.
- Hemenway street*, No. 73. Grade of edgestone tested, line and grade for edgestone, line and grade for edgestone tested, grade for inside measurement of sidewalk paving.
- Hollander street*, easterly corner Harold street. Grade of edgestone tested, grade for edgestone, line and grade for edgestone tested, measurement of sidewalk paving.
- Hollander street*, Nos. 52-54. Line and grade for edgestone tested and measurement of sidewalk paving.
- Hulbert street*, northerly corner Fenwick street. Line and grade for edgestone.
- Hulbert street*, at Regent street. Measurement of edgestone, gutter and sidewalk paving.
- Ipswich street*, southerly side, at Studio building. Grade of edgestone tested (twice), grade for edgestone, grade for inside and measurement of sidewalk paving.
- Ivy street*, Nos. 41 to 47. Grade of edgestone tested, grade for edgestone, and grade of edgestone tested.
- Ivy street*, easterly corner St. Mary's street. Line and grade for edgestone.

- Lawn street*, easterly side Heath street to Buckman street.
Grade for gutter.
- Magazine street*, northerly corner Norfolk avenue. Measurement of gutter.
- Massachusetts avenue*, southwesterly corner Newbury street.
Line and grade for edgestone tested and measurement of sidewalk paving.
- Massachusetts avenue*, Southampton street to railroad. Grade for macadam.
- Newbury street*, southerly corner Massachusetts avenue. Line and grade for edgestone tested and measurement of sidewalk paving.
- Newbury street*, southerly corner Charlesgate West. Grade of edgestone tested, grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Newcomb street*, northerly side, at bend. Line and grade for edgestone.
- Norfolk avenue*, Magazine street to Marshfield street. Line and grade for edgestone, and measurement of edgestone, roadway and sidewalk paving.
- Northampton street*, Washington street to Harrison avenue. Line and grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- Northampton street*, at Fellows street. Measurement of roadway paving.
- Norway street*, northerly side, at Bickerstaff street. Revised grade for edgestone and measurement of edgestone, gutter and crosswalk paving.
- Orchard Park street*, southwesterly corner Ambrose street. Line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Orchard Park street*, Chadwick street to bend. Line and grade for edgestone.
- Peterborough street*, southerly corner Jersey street. Grade of edgestone tested, line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Proctor street*, Norfolk avenue to Massachusetts avenue. Grade for grading.
- Public alley No. 901*, southwesterly corner Hemenway street. Grade of edgestone tested.
- Ray street*, at Regent street. Measurement of edgestone and gutter paving.
- Reed street*, at southerly corner Northampton street. Measurement of sidewalk paving.
- Reed court*. Grade for macadam.
- Regent street*. Line and grade for edgestone and measurement for edgestone, gutters and sidewalk paving.
- Regent street*, No. 76. Measurement for assessment.

- Ritchie street*, southwesterly corner Columbus avenue. Line and grade for edgestone, line and grade for edgestone tested and measurement of sidewalk paving.
- Round Hill street*, Nos. 27 to 47. Line and grade for edgestone.
- Roxbury street*, Nos. 83 to 87. Grade of edgestone tested and grade for inside.
- Ruthven street*, Nos. 5 and 7. Line and grade for edgestone, line and grade for edgestone tested and measurement of sidewalk paving.
- Ruthven street*, No. 54. Grade of edgestone tested and measurement of sidewalk paving.
- Ruthven street*, Nos. 62 to 64. Line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- St. James street*, at Regent street. Measurement of sidewalk paving.
- Shawmut avenue*, northeasterly corner Winthrop place. Grade of edgestone tested.
- Sherman street*, westerly side, Dale street to Catawba street. Line and grade for edgestone.
- Shirley street*, at Norfolk avenue. Measurement of edgestone, crosswalk and gutter paving.
- Southampton street*, at Atkinson street. Line and grade for edgestone.
- Terry street*, Columbus avenue to Tremont street. Line and grade for edgestone and measurement for assessment.
- Ulmer street*, Arklow street to Minden street. Grade for gutter.
- Walnut avenue*, southeasterly side, Townsend street to Harrishof street. Grade for edgestone.
- Ward street*, Huntington avenue to Parker street. Line and grade for edgestone and measurement to locate old edgestone.
- Warren street*, Nos. 89 to 99. Grade of edgestone tested, line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Warren street*, Nos. 511 to 513. Grade of edgestone tested, line and grade for edgestone, line and grade for edgestone tested, grade for inside and measurement of sidewalk paving.
- Washington street*, at Northampton street. Measurement of edgestone, roadway and sidewalk paving.
- Washington street*, Williams street to Vernon street. Grade for edgestone and measurement of edgestone, roadway and sidewalk paving.
- Washington street*, Townsend street to Atherton street. Grade for edgestone and measurement of edgestone, gutter, crosswalk, roadway and sidewalk paving.
- Washington street*, No. 2972. Measurement of sidewalk paving.
- Wayne street*, Nos. 7 to 9. Grade of edgestone tested and measurement of sidewalk paving.
- Westland avenue*, northeasterly corner Hemenway street. Measurement of sidewalk paving.

Wigglesworth street, Tremont street to Huntington avenue.
Line and grade for edgestone.

Worthington street, Tremont street to Huntington avenue. Line
and grade for edgestone.

Wyoming street, Warren street to Wabeno street. Line and
grade for edgestone and measurement of edgestone, gutter,
driveway and sidewalk paving.

DORCHESTER.

Abbot street, Nos. 1 to 16. Line and grade of edgestone tested,
line and grade for inside and measurement of sidewalk paving.

Alban street, No. 32. Measurement of sidewalk paving.

Allston street, No. 37. Line and grade of edgestone tested, line
and grade for inside and measurement of sidewalk paving.

Ashland street, No. 19. Line and grade of edgestone tested and
line and grade for inside.

Ashmont street, Adams street to Neponset avenue. Line and
grade for edgestone and measurement of edgestone and gutter
paving.

Bicknell street, No. 33. Measurement of sidewalk paving.

Bird street, No. 46. Line and grade of edgestone tested, line
and grade for inside and measurement of sidewalk paving.

Blue Hill avenue, northeasterly corner Ingleside street. Line
and grade of edgestone tested, line and grade for inside and
measurement of sidewalk paving.

Blue Hill avenue, east side, between Devon street and Intervale
street. Measurement of sidewalk paving.

Blue Hill avenue, Nos. 302 and 316. Line and grade of edge-
stone tested, line and grade for inside and measurement of
sidewalk paving.

Blue Hill avenue, Nos. 802 and 815. Measurement of sidewalk
paving.

Blue Hill avenue, Nos. 1047 to 1051. Line and grade of edge-
stone tested, line and grade for inside and measurement of
sidewalk paving.

Bodwell street, Nos. 19 to 25 and No. 31. Line and grade of
edgestone tested, line and grade for inside and measurement
of sidewalk paving.

Boston street, Dorset street to Mt. Vernon street. Line and
grade for resetting edgestone and measurement of edgestone
and gutter paving.

Bowdoin street, No. 210. Line and grade for edgestone and
measurement of edgestone and sidewalk paving.

Bowdoin street, No. 246. Line and grade for edgestone tested,
line and grade for inside and measurement of sidewalk paving.

Bowdoin street, Nos. 340 to 346. Line and grade for edgestone,
line and grade of edgestone tested, line and grade for inside
and measurement of sidewalk paving.

- Bowdoin street*, Nos. 333 to 414 and 416. Line and grade of edgestone tested, line and grade for inside and measurement of sidewalk paving.
- Bowdoin street*, Church street to No. 351. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside and measurement of sidewalk paving.
- Bradlee street*, Nos. 25 to 32 and 35. Line and grade for edgestone.
- Bradshaw street*, northeasterly corner McLellan street. Line and grade for edgestone.
- Callender street*, Blue Hill avenue to Lucerne street. Line and grade for sidewalk.
- Capen street*, No. 2. Line and grade for edgestone.
- Chamberlain street*, east side, Gaylord street to Harvard street. Line and grade for edgestone.
- Charles street*, northwesterly corner Ditson street. Line and grade of edgestone tested, line and grade for inside and measurement of sidewalk paving.
- Charles street*, Nos. 45 to 63 and No. 50. Line and grade of edgestone tested, line and grade for inside and measurement of sidewalk paving.
- Cunningham street*, Nos. 26-28 and 30. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Cushing avenue*, at St. Mary's Infant Asylum. Line and grade for edgestone.
- Dawson street*, Mallet street to Templeton street. Line and grade for construction.
- Denny street*, Nos. 9 and 11. Line and grade for edgestone.
- Dickens street*, Nos. 60 to 68. Line and grade for edgestone.
- Ditson street*, Nos. 2-8 and 10. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Ditson street*, No. 28. Line and grade of edgestone tested, line and grade for inside and measurement of sidewalk paving.
- Ditson street*, northwesterly corner Josephine street. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Dix street*, Nos. 12-27-72 and 92. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Dorchester avenue*, No. 1501. Line and grade of edgestone, grade for inside, and measurement of sidewalk paving.
- Dorchester avenue*, Roach street to Savin Hill avenue. Line and grade for resetting edgestone and measurement of edgestone, roadway and sidewalk paving.
- Dorchester avenue*, Ellet street to Hancock street. Line and grade for resetting edgestone and measurement of edgestone, roadway and sidewalk paving.
- East Cottage street*, No. 151. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.

- Eastman street*, Columbia road to Elder street. Line and grade for construction.
- Esmond street*, No 55. Measurement of sidewalk paving.
- Fuller street*, Nos. 19-28-42-60 to 70 and 55. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Geneva avenue*, Nos. 91 to 103 and No. 104. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Geneva avenue*, No. 342. Line and grade for edgestone.
- Glendale street*, No. 6. Line and grade for edgestone, line and grade of edgestone tested, and measurement of sidewalk paving.
- Glendale street*, Nos. 16-18 and 20. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside, and measurement of inside paving.
- Glenway street*, No. 106. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Grampian Way*, Nos. 50 to 66. Line and grade for edgestone.
- Greenbrier street*, Nos. 49 to 55. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Granite avenue*, Nos. 50 to 68. Line and grade for sidewalk.
- Hamilton street*, No. 193. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Hancock street*, Nos. 39, 43 and 49. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Harvard street*, southwesterly corner Standish street. Line and grade for edgestone.
- Harvard street*, No 76. Line and grade for edgestone.
- Harvard street*, Glenway street to School street. Line and grade for edgestone.
- Josephine street*, No. 14. Measurement of sidewalk paving.
- Kenwood street*, No. 62. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Kerwin street*, No. 33. Line and grade for edgestone.
- Kingsdale street*, Standish street to Wales street. Line and grade for construction.
- Kingsdale street*, No. 66. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Leroy street*, Nos. 26-28 and 32. Measurement of sidewalk paving.
- Linden street*, southeasterly corner Dorchester avenue. Line and grade for edgestone.
- Lonsdale street*, Nos. 31-49-93 and 103. Measurement of sidewalk paving.

- Magnolia street*, Nos. 29 and 31. Measurement of sidewalk paving.
- McLellan street*, Nos. 17-31-51-53 and 57. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- McLellan street*, No. 86. Line and grade for edgestone.
- Melville avenue*, southeasterly corner Silloway street. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Mt. Vernon street*, Dorchester avenue to Shoreham street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Norfolk street*, No. 166. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Norfolk terrace*, Washington street to Norfolk street. Line and grade for gutter.
- Norton street*, Nos. 37-39-51 and 53. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside and measurement of sidewalk paving.
- Park street*, northwesterly corner Marlowe street. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- River street*, Blue Hill avenue to Hyde Park line. Line and grade for construction.
- River street*, Blue Hill avenue to Riverside place. Line and grade for resetting edgestone.
- Roseclair street*, Nos. 2 to 8 and 57 and 59. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Rosedale street*, No. 30. Measurement of sidewalk paving.
- Sagamore street*, Nos. 37 and 39. Measurement of sidewalk paving.
- Savin Hill avenue*, near Woodland avenue. Line and grade for edgestone.
- Savin Hill avenue*, southwesterly corner Denny street. Line and grade for edgestone.
- Sayward street*, Nos. 11-13 and 16. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- School street*, Bradlee street to Harvard street. Line and grade for edgestone.
- School street*, No. 37. Measurement of sidewalk paving.
- Seaver street*, No. 358. Line and grade for edgestone.
- Shenandoah street*, Nos. 2 and 9. Measurement of sidewalk paving.
- Silloway street*, southeasterly corner Melville avenue. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside and measurement of sidewalk paving.
- Southern avenue*, near Darling street. Line and grade for edgestone.

- Spencer street*, No. 15. Measurement of sidewalk paving.
- Stoughton street*, No. 91. Line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.
- Summer street*, No. 16. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Talbot avenue*, both sides of Brent street. Line and grade for resetting edgestone and measurement of edgestone and gutter paving.
- Tebroc street*, Bowdoin street to Levant street. Line and grade for edgestone.
- Topliff street*, Bowdoin street to Westville street. Line and grade for edgestone and measurement of edgestone and gutter paving.
- Topliff street*, Nos. 11-13-15-19-23-74-76-80 and 84. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Walk Hill street*, Blue Hill avenue to Harvard street. Line and grade for construction.
- Walnut street*, Nos. 3 to 21. Line and grade for edgestone.
- Walnut street*, Nos. 8 and 10. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Walton street*, between Nos. 25 and 31. Line and grade for edgestone.
- Welles avenue*, Nos. 18 to 26. Line and grade for edgestone, line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Wheatland avenue*, Nos. 26 to 30. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Willis street*, No. 46. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.
- Wolcott street*, No. 26. Line and grade of edgestone tested, line and grade for inside, and measurement of sidewalk paving.

WEST ROXBURY.

- Ashfield street*, No. 31. Estimate of edgestone required, line and grade for setting edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.
- Ashland street*, southerly side, at Washington street. Estimate of edgestone required and line and grade for setting edgestone.
- Beech street*, westerly side Anawan avenue to Westbourne street, and easterly side Westbourne street to Washington street. Profile to fix grade, line and grade for gutters, and measurement of gutter paving.
- Beech street*, No. 143. Line and grade for edgestone and measurement of edgestone and gutter paving.

Belgrade avenue, south street to Anawan avenue. Street lines and corners staked out for construction.

Blakemore street, Florence street to railroad bridge. Estimate of edgestone required, line and grade for edgestone, and measurement of edgestone and gutter paving.

Burroughs street, No. 60. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Brown avenue, Ridge street to Ashland street. Plan and profile to fix grade, line and grade for edgestone, and measurement of edgestone, gutter and crosswalk paving.

Brown avenue, Ashland street to Poplar street. Line and grade for edgestone and gutter paving, and measurement of edgestone, gutter and crosswalk paving.

Canterbury street, No. 16. Estimate of edgestone required, line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Centre street, No. 1129. Estimate of edgestone required and line and grade for edgestone.

Centre street, southerly corner Bellevue street. Line and grade for retaining wall and fence.

Clive street, No. 14. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Florence street, Ridge street to Sherwood street. Estimate of edgestone required, line and grade for edgestone, and measurement of edgestone, gutter and crosswalk paving.

Florence street, easterly side, Nos. 94 to 149. Line and grade for paving gutters.

Green street, near Centre street. Street line for sidewalk paving.

Green street, Washington street to Centre street. Measurement of sidewalk paving.

Hyde Park avenue, Nos. 43 to 51. Estimate of edgestone required and line and grade for edgestone.

Hyde Park avenue, from Walk Hill street to about 281 feet north of Ashland street. Street lines and corners staked out for construction.

Metropolitan avenue, at Augustus avenue. Estimate of edgestone required.

Pond street, opposite May street. Estimate of edgestone required and line and grade for edgestone.

Robeson street, No. 2. Street line and grade for artificial stone driveway.

Sheridan street, No. 33. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

South street, Walk Hill street, No. 290. Line and grade for edgestone.

South street, Nos. 290-294. Line and grade for edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Walk Hill street, Wenham street to Hyde Park avenue. Line and grade for edgestone.

Washington street, No. 3768. Line and grade for setting edgestone.

Washington street, westerly side, Cornell street to Beech street. Line and grade for sidewalk construction.

BRIGHTON.

Allston street, Nos. 35 to 45. Line and grade for edgestone.

Allston street, at Griggs place. Line for circular edgestone.

Allston street, at Commonwealth avenue. Line and grade for grading street.

Allston street, corner Commonwealth avenue. Estimate of edgestone required, line and grade for edgestone, line and grade of edgestone tested, grade for inside and measurement of sidewalk paving.

Allston street, at Warren street. Line and grade for grading street.

Ashford street, No. 65. Line and grade for edgestone.

Ashford street, No. 59. Estimate of edgestone required and line and grade for edgestone.

Ashford street, Malvern street to Pratt street. Estimate of edgestone required and line and grade for edgestone.

Bigelow street, Washington street to Faneuil street. Estimate of edgestone required and line and grade for edgestone

Brentwood street, corner Athol street. Estimate of edgestone required and line and grade for edgestone.

Brighton avenue, Nos. 244 to 254. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Commonwealth avenue, Nos. 1375 to 1381. Street line and grade for artificial stone sidewalk and measurement of sidewalk paving.

Eastburn street, Washington street to Mt. Vernon street. Line and grade for paving gutters and measurement of gutter paving.

Englewood avenue, Chestnut Hill avenue to Brookline line. Line and grade for resetting edgestone and measurement of sidewalk paving.

Henshaw street, Nos. 9 and 11. Estimate of edgestone required, line and grade of edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Malvern street, Gardner street to Ashford street. Line and grade for resetting edgestone.

Market street, No. 396. Line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Market street, Nos. 427 to 439. Profile to fix grade, line and grade for resetting edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Nonantum street, Washington street to Newton line. Line and grade for paving gutters and measurement of gutter paving.

Reedsdale street, Brighton avenue to Linden street. Line and grade for paving gutters.

Royal street, westerly side, at Cambridge street. Line and grade for resetting edgestone.

Royal street, easterly side, Nos. 1 to 21. Estimate of edgestone required, line and grade of edgestone, and measurement of edgestone.

Vineland street, Market street to North Beacon street. Line and grade for paving gutters.

Washington street, Nos. 367 to 375. Line and grade for resetting edgestone, line and grade of edgestone tested, grade for inside, and measurement of sidewalk paving.

Washington street, Tremont street to No. 704. Line and grade for sidewalk construction.

Warren street, Allston street to Brookline line. Line and grade for grading street.

Westford street. Line and grade for paving gutters.

PLANS

IN SURVEYING DIVISION, ENGINEERING DEPARTMENT, JANUARY 31, 1906.

Indexed.	General Head under which Classified.	Number of Plans.
Vol. A.....	Plans of estates (lithographed).....	221
" B.....	" " " "	189
" C.....	" " " " in Brighton.....	42
" D.....	" " " " in West Roxbury.....	92
" E.....	" " " "	57
" F.....	" " " "	16
" G.....	" " " "	1
" 1 to 13 ¹	" " " " wldenings, etc.....	664
" { 14, 15, 16, } and 17. }	" " " "	505
" 18.....	School-houses and miscellaneous plans.....	95
" 19.....	Plans from actual survey in City Proper.....	130
" 20.....	Profiles of City Proper and Boston Harbor, and ancient plans.....	91
" 21.....	Plans and profiles of streets in East Boston, 1849.....	45
" 22.....	" " " " " " " " 1868.....	45
" 23.....	" " " " " " " " South Boston, 1848.....	27
" 24.....	" " " " " " " " 1860.....	39
" 25.....	" " " " " " " " at South End.....	21
" 26.....	" " " " " " " " in Church and Suffolk streets Districts.....	38
" 27.....	" " " " " " " " various streets.....	16
" 28.....	Miscellaneous plans, estates, etc.....	79
" 29.....	" " " " " " " "	69
" 30.....	" " " " " " " "	97
" 31.....	Official plans from 1851 to 1854.....	103
" 32.....	Plans of estates.....	165
" 33.....	" " " "	131
" 34.....	" " " "	108
" 35.....	" " " "	256
" 36.....	" " " "	118
" 37.....	" " " "	53
" 38 } " 39 }	Hale's plans of the streets in Boston, 1819.....	176
" 40.....	Plans of estates.....	66
	<i>Carried forward</i>	3,755

¹ Vol. 8 is a set of Architects' plans, and has been transferred to the Public Buildings Department.

PLANS

IN SURVEYING DIVISION, ENGINEERING DEPARTMENT, JANUARY 31,
1906. — *Continued.*

Indexed.	General Head under which Classified.	Number of Plans.
	<i>Brought forward</i>	3,755
Vol. 41 { Part 1....	Plans of estate.....	229
{ Part 2....	“ “ “	265
“ 42.....	Ancient plans of estates in South Boston, etc.....	46
“ 43.....	Sectional plans of City lands at South End.....	24
“ 44.....	Plans of estates in Roxbury.....	77
“ 45.....	“ “ “ “ “	70
“ 46.....	“ “ “ “ “	80
“ 47.....	“ “ widenings in Roxbury.....	50
“ 48.....	“ “ “ etc., in Roxbury.....	140
“ 49.....	“ “ “ “ “ “	73
“ 50.....	Third Parish and Grammar School lands in Roxbury...	57
“ 51.....	Plans of widenings in Roxbury.....	59
“ 52.....	“ “ City lands and widenings in Roxbury.....	92
“ 53.....	Profiles of streets in Roxbury.	76
“ 54.....	“ “ “ “ “	87
“ 55.....	“ “ “ “ “	42
“ 56.....	“ “ “ “ “	56
“ 57.....	Plans of widenings in Brighton.....	25
“ 58.....	“ “ estates in Brighton.....	115
“ 59.....	“ “ “ “ “	74
“ 60.....	“ “ City property, etc., in Brighton.....	18
“ 61.....	“ “ widenings in West Roxbury.....	75
“ 62.....	“ “ “ “ “ “	44
“ 63.....	Profiles of streets.....	58
“ 64.....	Plans of City property, etc., in West Roxbury.....	27
“ 65.....	“ “ estates, etc., in West Roxbury.....	199
“ 66.....	“ “ “ “ “ “	217
“ 67.....	“ “ “ “ “ “	73
“ 68.....	“ “ “ “ “ “ and Brighton..	152
“ 69.....	“ “ “ “	140
“ 70.....	“ “ “ “	189
“ 71 to 82.....	Charlestown plans, in bound volumes, showing street widenings and estates.....	626
“ 83.....	Charlestown street surveys.....	229
“ 84.....	Miscellaneous plans.....	106
	<i>Carried forward</i>	7,645

PLANS

IN SURVEYING DIVISION, ENGINEERING DEPARTMENT, JANUARY 31,
1906.— *Continued.*

Indexed.	General Head under which Classified.	Number of Plans.
	<i>Brought forward</i>	7,645
Vol. 85.....	Plans of estates in Roxbury.....	455
“ 86.....	“ “ “ “ “	18
“ 87.....	“ “ “ etc.....	169
“ 88.....	“ “ “ “	113
“ 89.....	“ “ “ “	140
“ 90.....	“ “ “ “	10
“ 91.....	Insurance volumes	25
“ 92.....	“ “	31
“ 93.....	“ “	28
“ 94.....	“ “	27
“ 95.....	Dorchester surveys.....	65
“ 96.....	“ “	61
“ 97.....	“ “	63
“ 98.....	Plans of estates, etc.....	104
“ 99.....	“ “ “ “ in Dorchester.....	534
“ 100.....	Sectional plans, City Proper, pipe locations.....	12
“ 101.....	“ “ South Boston, west of G street.....	24
“ 102.....	“ “ “ “ east “ “ “	19
“ 103.....	“ “ East Boston southeast of Bremen st..	27
“ 104.....	“ “ “ “ northwest “ “ “	27
“ 105.....	Miscellaneous plans.....	8
“ 106.....	Tracings of plans and profiles.....	125
“ 107.....	“ “ “ “ “	152
“ 108.....	“ “ “ “ “	137
“ 109.....	“ “ “ “ “	215
“ 110.....	“ “ “ “ “	267
“ 111.....	Assessors' plans, 1, Roxbury and West Roxbury.....	59
“ 112.....	“ “ 2, Dorchester and Brighton.....	24
“ 113.....	“ “ 3, City Proper.....	81
“ 114.....	“ “ 4, South Bay, Harbor and Charles- town.....	49
“ 115.....	“ “ 5, East Boston.....	72
“ 116.....	“ “ 6A, South Boston	129
“ 117.....	“ “ 6B, South Boston	137
	<i>Carried forward</i>	11,082

PLANS

IN SURVEYING DIVISION, ENGINEERING DEPARTMENT, JANUARY 31,
1906. — *Continued.*

Indexed.	General Head under which Classified.	Number of Plans.
	<i>Brought forward</i>	11,082
Vol. 118.....	Assessors' Plans, 7A, Back Bay.....	127
" 119.....	" " 8A, Roxbury.....	149
" 120.....	" " 8B, "	139
" 121.....	" " 9A, Dorchester.....	149
" 122.....	" " 9B, "	162
" 123.....	" " 10A, West Roxbury.....	100
" 124.....	" " 10B, " "	127
" 125.....	" " 11A, Brighton	112
" 126.....	Hale's street maps of Boston, Whitmore reproduction..	144
" 127.....	Sectional plans, City Proper, Boston Gas Light Co.....	37
" 128.....	Public lands belonging to town of Dorchester... ..	15
" 129.....	Copies of plans filed with town of Dorchester previous to annexation.....	65
" 130.....	Copies of deed plans and plans of other surveyors....	748
" 131.....	" " " " " " " " " "	526
" 132.....	" " " " " " " " " "	17
" 133	Copies of plans from Land Court.....	205
" 134.....	" " " " " " " "	132
In Case A.....	Maps of Boston, etc.....	151
" Drawer B.....	Plans and profiles of streets in Dorchester.....	374
" " C.....	Plans of estates in Dorchester.....	677
" Cases CC.....	Miscellaneous rolled plans.....	1,053
" Drawer E.....	Plans from surveys in City Proper.....	589
" " F.....	Plans and profiles from surveys in City Proper and Roxbury.....	711
" " G.....	South Boston plans and profiles.....	353
" " H.....	East Boston plans and profiles.....	142
" " L.....	Official plans, profiles, etc.....	3,864
" " M.....	Copies of plans by other surveyors.....	324
" " N.....	Plans of City lands.....	154
" " O.....	Miscellaneous street plans.....	79
" " S.....	Plans of takings for Sewerage Works.....	166
" Case T	Miscellaneous rolled tracings.....	1,044
" Drawers	Tracings of plans and profiles.....	152
Vol. I. to LXVI....	Copies of official plans indexed in Vol.31, and Drawer L,	2,724
	<i>Carried forward</i>	26,593

PLANS

IN SURVEYING DIVISION, ENGINEERING DEPARTMENT, JANUARY 31,
1906.— *Continued.*

Indexed.	General Head under which Classified.	Number of Plans.
	<i>Brought forward</i>	26,593
	Maps, etc., in bound volumes.....	1,450
	Miscellaneous plans of the Back Bay Commission in portfolio.....	15
	Hanging plans.....	23
	Plans in Progress, City Proper.....	83
	“ “ “ South Boston.....	51
	“ “ “ East Boston.....	49
	“ “ “ Roxbury.....	102
	“ “ “ Dorchester.....	218
	“ “ “ West Roxbury.....	148
	“ “ “ Brighton.....	79
	“ “ “ Charlestown.....	19
	Roxbury sectional plans.....	163
	West Roxbury sectional plans.....	83
	Sectional plans filed under Board of Survey act.....	541
	Plans filed by the Boston Transit Commission.....	25
	“ “ “ “ Boston Terminal Company.....	1
	Sectional plans of Dorchester.....	232
	Blue prints of official and progress plans.....	2,022
	Blue prints, change of Location and Grade, N.Y., N.H. & H. R.R., at South End.....	26
	Blue prints, change of Grade, Providence Division, Old Colony R.R.....	48
	Blue prints, change of Grade, West Roxbury branch ..	16
	Plans of proposed streets submitted by owners and approved by the Board of Street Commissioners:	
	City Proper.....	2
	East Boston.....	13
	South Boston.....	15
	Roxbury.....	76
	Dorchester.....	212
	Charlestown.....	1
	West Roxbury.....	124
	Brighton.....	62
	<i>Carried forward</i>	32,492

PLANS

IN SURVEYING DIVISION, ENGINEERING DEPARTMENT, JANUARY
1906. — *Concluded.*

Indexed.	General Head under which Classified.	Number of Plans.
	<i>Brought forward</i>	32,492
	Plans of proposed streets submitted by owners for the approval of the Board of Street Commissioners now under consideration:	
	Roxbury.....	25
	Dorchester.....	74
	West Roxbury.....	39
	Brighton.....	39
		32,669

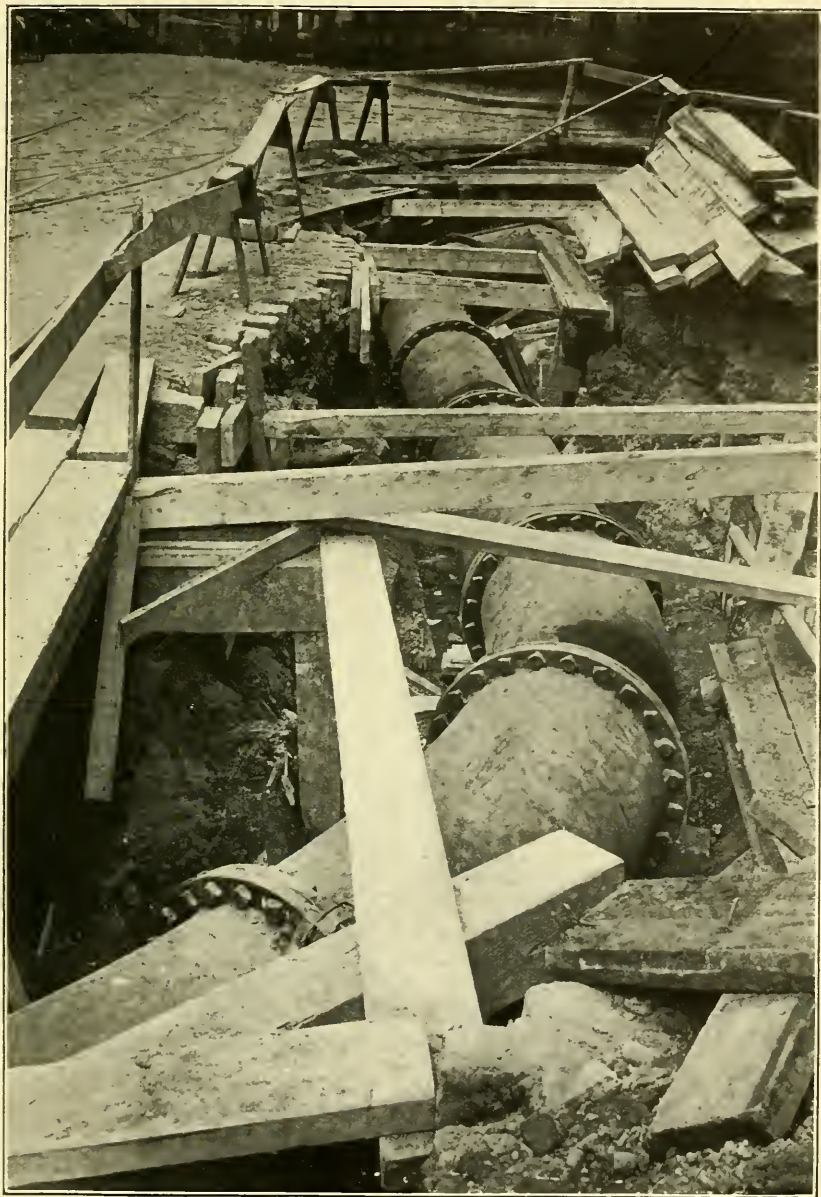
There are also 3,747 lithographed plans in the office at Old Court House not included in the foregoing list, viz.:

Lithographed maps of	Dorchester, made in 1869	34
"	" " " " 1880	126
"	" " West Roxbury, made in 1873	10
"	" " Fort Hill, made in 1866-69	78
"	" " Church-street district, made in 1868	170
"	" " Washington-street widening (parts 1, 2, 3), made in 1860	1,190
"	" " Washington-street extension, made in 1869,	324
"	" " North street, made in 1859	44
"	" " Stony brook, drainage area	10
"	" " Boston, made in 1866-67	98
"	" " Boston, made in 1888	30
"	" " Suffolk-street district, made in 1869	9
"	" " South Boston, made in 1880	60
"	" " Roxbury, made in 1880	81
"	" " Burnt district	65
"	" " Mt. Hope Cemetery	24
"	" " Winthrop Farm	49
"	" " Hanover avenue	44
"	" " Muddy river	41
"	" " Pemberton square, Court-house site	195
"	" " East Newton street, lots on, sold by auction, made in 1888	42
"	" " Public lands in South Boston, sold by auction, made in 1885	82
"	" " Public lands in South Boston, sold by auction, made in 1888	8
"	" " Boylston street, old Public Library lot	17
"	" " Public lands in South Boston, sold by auction, made in 1882	136
"	" " Boston Directory map, made in 1886	60
"	" " Boston, scale 1,600 feet to an inch, made in 1890	90
Carried forward		3,117

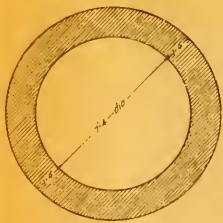
<i>Brought forward</i>			3,117
Lithographed maps of	Boston, scale 800 feet to an inch, made in 1891, colored plans		5
"	" " Boston Proper, scale 500 feet to an inch, made in 1894		12
"	" " Exhibit No. 1, City Surveyor's Report, 1893		65
"	" " Exhibit No. 2, City Surveyor's Report, 1893		85
"	" " Exhibit No. 3, City Surveyor's Report, 1893		101
"	" " High street, public lands sold by auction,		16
"	" " Beacon Hill, State House site		38
"	" " Harrison avenue, Savage School-house lot, auction plan		57
"	" " Boston Proper, showing changes in street and wharf lines from 1795 to 1895		251
			<u>3,747</u>

[FROM THE CITY ENGINEER'S REPORT TO THE
WATER DEPARTMENT.]

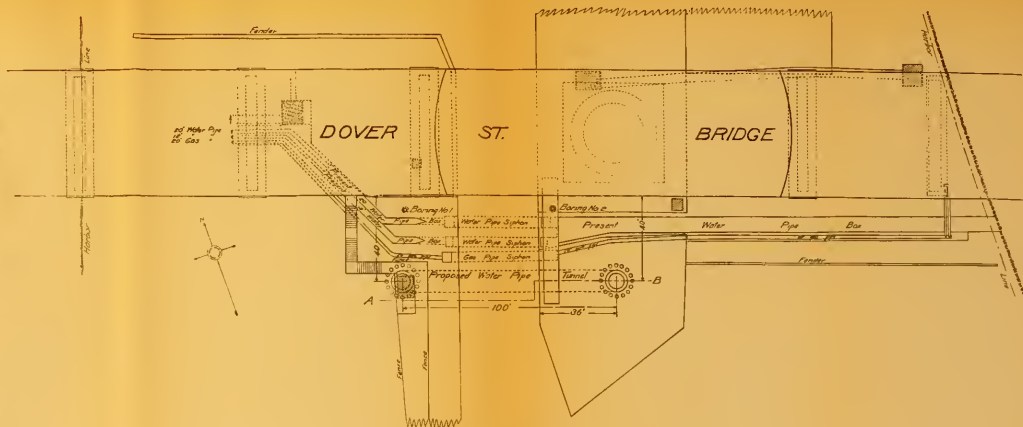
The policy of providing permanent, accessible structures in which to carry water pipes under navigable channels was continued. Owing to the proposed widening of the draw of Dover-street bridge it became necessary to abandon the 24-inch low service and 16-inch high service siphons at that point, and to replace them a brick conduit was built south of the old location with a distance of 100 feet between the centres of its shafts; its horizontal portion is circular, 8 feet in diameter in the clear, with 12-inch brick walls and with its top at grade —35, the present bottom of channel being at grade —18; the shafts, extending upwards at each side of draw opening to grade 15.5, are circular, 7 feet 4 inches in diameter in the clear, with 16-inch brick walls inclosed in a steel cylinder $\frac{1}{2}$ inch thick, from their top to a point about 10 feet below surface of ground; to prevent injury from impact of passing vessels fenders were built around the shafts. The work was done by means of compressed air, the excavated material being rather soft blue clay with sand seams: 20-inch low service and 16-inch high service pipes were laid in the conduit and the old siphons were abandoned. A conduit was built in tunnel in Charlestown, extending from the Mystic playground under the south channel of Mystic river to the Boston & Maine railroad property, a distance of 567 feet; it is circular in form, 7 feet in diameter with 12-inch brick walls; the top of brickwork under the channel is at grade —39, the bottom of channel being at grade —17.5. The excavation was made in rather stiff blue clay with sand seams and occasional boulders, except for a distance of about 100 feet where sand, gravel and loose stones were encountered; air pressure was used throughout the work. A 30-inch pipe was laid in the conduit connecting at the northerly end with 24-inch and 30-inch mains, and extending, at the southerly end, through the Mystic playground, to a connection at Scott's court with the 20-inch and 24-inch mains in Chelsea street, a distance of 1,015 feet. The completion of this work ensures, under ordinary circumstances, a sufficient service for the large interests situated between the north and south channels of Mystic river; the old mains



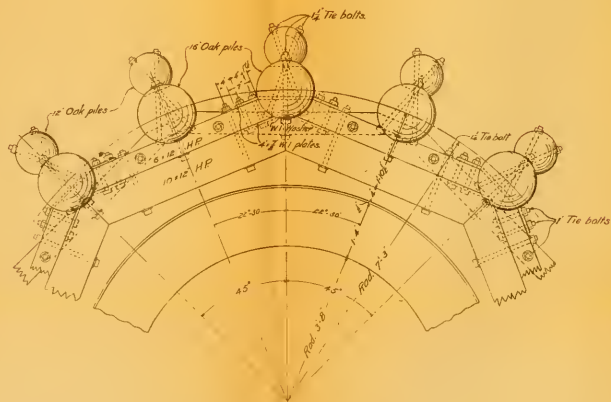
THIRTY-INCH CAST-IRON FLANGED PIPE CROSSING WASHINGTON STREET, AT ESSEX STREET, LOOKING NORTH.



SECTION THROUGH SHAFT ON LINE E-F



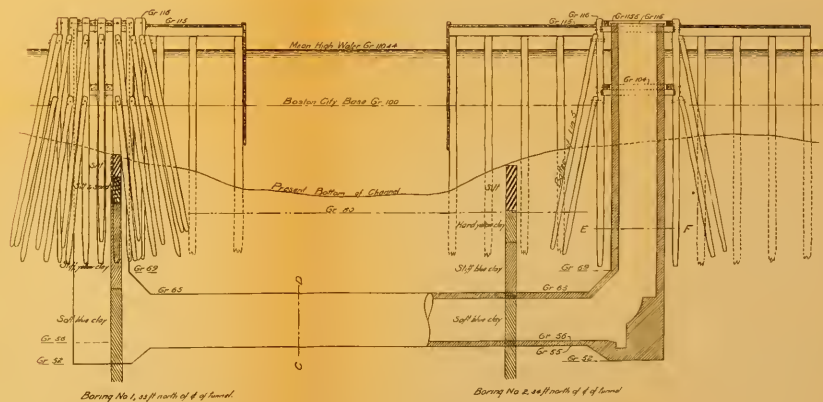
PLAN OF DOVER STREET BRIDGE
SHOWING LOCATION OF PROPOSED WATER PIPE TUNNEL



DETAIL OF TUNNEL SHAFT
AND
OUTSIDE WOODEN GUARD

CITY OF BOSTON - ENGINEERING DEPT.
PLAN AND DETAILS
OF
PROPOSED TUNNEL FOR WATER PIPE
ACROSS FORT POINT CHANNEL
AT
DOVER ST. BRIDGE

William Jackson
Cory
JANUARY, 1905



LONGITUDINAL SECTION THROUGH LINE A-B.

Note: Base used on this plan is 100 ft below Boston City Base.



crossing the channel, which were abandoned, have for several years past been a cause for anxiety, as they were seriously weakened by the effect of salt water and one of them had twice been put out of service by frost.

Plan opposite shows the Dover-street tunnel, and is typical of the Congress-street tunnel, built in 1904, and of the Mystic tunnel.

The work of relaying the Tremont-street low service main was continued, 860 feet of pipe southerly from Northampton street being relaid.

On Southampton street the 24-inch steel pipe crossing the second waterway easterly from Magazine street was replaced with 30-inch cast-iron pipe supported on piles.

A large amount of miscellaneous work was done in connection with the construction of the subway in Washington street; the connection over the subway between the 36-inch main laid in Essex street in 1904 and the 30-inch main in Boylston street was made with 30-inch cast-iron flanged pipe, jointed with rubber gaskets; in a distance of 76 feet a curvature of 166 degrees was made, the flanged pipe forming in effect a long "special," and making the problem of caring for the unbalanced pressures a simple one. The 24-inch main in Washington street between Water street and Court avenue, laid in 1849, was replaced with new pipe, as it was in poor condition and it was necessary to support it in the subway excavation during construction. In addition to the above a very large number of changes in distribution pipes and in services were made on account of subway construction; in fact work of some kind was practically continuous throughout the year.

The 30-inch high service in Geneva avenue, Dorchester, was lowered for a distance of 343 feet between Columbia road and Olney street to conform to the new grade of the street under the New York, New Haven & Hartford Railroad bridges.

A 20-inch high service main was laid in Codman street, Dorchester, from the 30-inch main in Washington street to Dorchester avenue, reinforcing the distribution system at that point.

The practice of relaying small mains with pipes adequate for the demands of modern fire service has been continued.

In Charlestown a 16-inch main was laid in Water and Chamber streets, replacing 8-inch and 12-inch pipe, and affording an ample fire supply for the neighborhood as well as for the extensive fire system installed by the Boston & Maine railway in the Hoosac docks; this system, the first

of its kind in Boston, promises to be effective; it is a force pipe system, the fire engines pumping water from the city mains directly into the private pipes, which are large enough to furnish effective fire streams at distances from the engines impossible with ordinary fire hose. In the South End 2,242 feet of 16-inch pipe was laid in Harrison avenue northerly from Northampton street, replacing a 12-inch line which was in very bad condition.

Some other streets relaid with 12-inch and 10-inch pipe are as follows: Allen, Blossom to Chambers; Tileston, Hanover to Salem; Blackstone, Hanover to Cross; Chatham, Commercial to Merchants row; Tyler, Beach to Harvard; Eliot, Washington to Pleasant; Savoy, Washington to Harrison avenue; Northampton, Washington to Harrison avenue; Village, Dover to Castle; Rogers avenue, Ruggles to Huntington avenue; Greenwich, Freeport to Duncan; Park, Clayton to within 380 feet of Dorchester avenue; Moreland, Blue Hill avenue to Perrin; Perrin, Moreland to Waverly; Waverly, Perrin to Warren; Belgrade avenue, Corinth to Dudley avenue; Sixth, C to E; Mill, Webster to Sumner; Webster, Mill to Lewis; Foss, Chelsea to Water.

The total amount of relaying done was as follows:

4,753 feet of 16-inch pipe replacing 6, 8 and 12-inch pipe.					
10,343	"	12-inch	"	"	6, 8 and 10-inch "
6,135	"	10-inch	"	"	4, 6 and 8-inch "
2,675	"	8-inch	"	"	4 and 6-inch "

Eleven contracts for rock excavation have been made during the year. Sixty-nine petitions for main pipe extension have been considered and reported upon in regard to grade, size of pipe, etc. A large number of miscellaneous investigations and reports have been made in regard to changes in location of main pipes and hydrants, changes of service, etc.

All main pipe, hydrants, gates, etc., have been located as they were laid and the plans of the same have been kept closely up to date. Substantial progress has been made towards the completion of sectional plans of the pipe system and of contour plans of the city on a scale of 200 feet to an inch.

Careful tests of the quality of iron and composition furnished have been made.

The results of electrical surveys and investigations made throughout the city again prove conclusively that electric currents of varying strength are present, practically everywhere, on the water pipes; while actual instances of damage

resulting from electrolysis have been found, during the year, in the case of a few lead services only, yet the existing conditions are a constant menace to the life of the water pipes, and more serious damage may well be resulting than has yet been discovered.

GENERAL STATISTICS.

BOSTON WATER DEPARTMENT.

Daily average amount used (gallons) . . .	89,743,900
Daily average amount used through meters during 1905 (gallons)	17,384,100
Number of services February 1, 1906 . . .	92,313
Number of meters in service February 1, 1906 .	4,990
Number of meters under supervision February 1, 1906	122
Number of elevators under supervision February 1, 1906	590
Length of supply and distributing mains in miles February 1	736.1
Number of public hydrants in use February 1, 1906	7,692
Yearly revenue from annual water rates (as- sessed)	\$1,331,990.07
Yearly revenue from metered water (assessed) .	\$1,113,763.05
Percentage of total revenue from metered water,	45.5
Yearly expense of maintenance	\$586,891.39

Monthly Rainfall in Inches during 1905 in Various Places in Eastern Massachusetts.

PLACES.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
Framingham.....	5.30	2.12	3.21	2.66	1.23	5.03	5.21	2.54	7.16	1.41	1.94	4.02	41.83
Dam 4, Ashland.....	5.28	2.00	3.10	2.48	1.46	4.46	4.96	2.70	6.97	1.52	2.06	3.94	40.93
Cordaville.....	5.27	2.08	3.01	2.95	1.28	5.64	5.38	2.94	7.31	1.79	2.33	4.24	44.22
Lake Cochituate.....	5.40	2.00	3.28	2.37	1.57	5.46	3.24	2.89	7.00	1.35	2.07	4.07	41.20
Chestnut Hill Reservoir.....	5.49	2.27	3.34	3.08	1.65	5.38	1.92	3.47	5.93	1.53	2.51	4.27	40.84
Spot Pond.....	5.61	1.94	3.28	2.54	1.39	5.71	1.01	3.66	7.61	1.41	2.63	3.96	40.75
Cambridge Observatory.....	6.13	1.33	2.86	2.62	1.53	4.30	1.07	3.04	5.99	1.23	2.24	3.65	36.60
Waltham, Boston Manufacturing Co.....	5.11	1.09	3.25	3.15	1.73	4.52	1.20	3.30	5.40	1.52	2.34	4.79	37.40
Lowell, Locks and Canals Co.....	6.96	1.71	3.71	2.15	1.29	5.18	0.59	4.50	6.39	1.33	2.25	3.86	39.92
Main Drainage Yard, 735 Massachusetts ave.....	3.40	1.65	2.66	3.03	1.58	5.22	1.40	3.29	5.27	1.42	2.40	3.29	34.61
Average of Above Ten Places.....	5.40	1.88	3.17	2.75	1.47	5.09	2.60	3.23	6.50	1.45	2.28	4.01	39.83

Average Stated Monthly Heights, in Feet, above City Base, to which Water Rose at Different Stations, on the Boston Water Works.

1905.	Chestnut Hill Pumping Station, Brighton.				Boston Common.				Engine House No. 8, Salem street.				Engine House No. 7, East street.				Engine House No. 38, Congress street, South Boston.				Boston Water Dept. Yard, 718 Albany street, Roxbury.				Engine House No. 2, Fourth and O streets, South Boston.				Engine House No. 20, Walnut street, Dorchester. High Service.		Engine House No. 34, Western avenue, Brighton.				Engine House No. 32, Bunker Hill street, Charlestown.				Engine House No. 6, Marion street, East Boston.				City Hall High Service.		Engine House No. 24, Quincy street, Roxbury. High Service.		Engine House No. 19, Norfolk street, Dorchester. High Service.		Engine House No. 28, Chestnut Hill, Brighton. High Service.		Parental School, Spring street, West Roxbury. High Service.	
Month.	3 A.M.	9 A.M.	1 P.M.	5 P.M.	3 A.M.	9 A.M.	1 P.M.	5 P.M.	3 A.M.	9 A.M.	1 P.M.	5 P.M.	3 A.M.	9 A.M.	1 P.M.	5 P.M.	3 A.M.	9 A.M.	1 P.M.	5 P.M.	3 A.M.	9 A.M.	1 P.M.	5 P.M.	3 A.M.	9 A.M.	1 P.M.	5 P.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.	3 A.M.	9 A.M.
January.	139.6	163.1	166.2	157.9	122.3	117.3	120.6	121.6	119.0	111.8	114.1	116.9	121.1	115.3	117.5	120.1	115.6	107.6	111.2	113.7	123.3	119.1	123.1	123.5	116.3	110.3	111.4	114.2	246.7	235.5	128.1	134.2	134.6	134.8	159.6	157.1	157.8	158.2	149.0	140.5	143.7	145.8	244.8	234.7	243.9	235.2	247.1	241.5	245.1	243.4	248.4	243.1
February.	138.5	160.8	158.3	157.1	119.2	118.5	118.1	119.8	116.4	114.2	111.8	115.1	117.9	117.2	116.3	117.2	112.4	108.5	109.1	111.3	120.4	121.2	120.9	121.4	119.0	108.6	109.0	111.2	242.7	232.8	138.6	140.1	135.9	135.6	155.2	154.2	154.5	154.5	141.5	133.9	138.5	140.3	244.0	232.4	240.7	231.9	245.6	240.5	245.8	243.7
March.	140.9	165.7	169.3	157.8	135.5	123.1	125.9	126.8	132.4	119.1	119.0	122.0	133.3	121.6	123.8	125.2	129.5	115.1	117.1	118.8	136.2	126.9	128.8	128.5	130.0	116.3	118.4	120.9	245.0	235.5	138.9	140.3	139.4	139.0	162.3	157.5	157.7	158.9	162.9	142.7	145.9	147.3	245.5	235.8	244.3	236.0	248.4	241.9	246.4	244.1	246.8	240.9
April.	158.2	161.9	158.4	158.1	147.2	122.7	127.2	129.9	145.3	121.3	122.8	127.3	146.8	121.4	126.8	127.9	143.7	116.2	129.5	124.4	148.6	126.5	131.0	131.7	146.0	118.7	123.2	126.0	245.4	235.9	151.7	139.4	141.3	142.0	162.9	158.6	157.1	157.5	156.9	145.5	148.8	150.3	246.5	236.0	244.3	235.4	248.8	242.8	246.8	244.1	248.2	242.1
May.	157.1	165.0	160.3	158.8	147.1	122.7	127.3	128.1	144.0	120.7	121.3	124.9	145.9	120.4	125.8	126.3	143.5	117.0	120.9	123.8	148.4	126.4	132.5	130.2	145.9	118.6	121.4	125.1	245.5	233.3	151.7	110.2	141.3	142.2	165.9	158.9	160.1	160.5	158.9	147.9	151.7	152.5	246.5	253.4	244.4	232.8	245.2	240.6	246.7	245.4	248.2	240.2
June.	151.9	165.6	160.3	158.5	143.0	122.4	126.5	126.8	138.4	117.3	122.5	121.4	140.1	118.3	122.2	122.0	138.1	115.7	119.9	121.8	142.9	125.7	130.4	129.2	140.7	116.3	120.6	122.6	244.7	232.1	146.5	138.8	141.9	145.4	162.9	158.9	160.6	160.2	157.7	146.4	150.6	162.0	245.1	232.1	243.1	231.5	247.5	236.1	248.4	245.4	247.5	239.3
July.	150.4	164.9	160.2	158.8	139.1	120.4	125.7	125.7	138.5	116.8	123.4	121.8	133.1	116.1	123.2	123.8	135.7	113.7	117.8	119.1	141.2	123.8	129.8	126.5	137.3	112.9	120.0	120.1	243.5	230.1	144.2	137.9	141.4	139.7	164.9	158.3	160.6	161.2	157.9	144.8	160.4	161.3	244.7	231.7	242.6	231.5	246.5	238.0	248.5	245.8	246.7	238.4
August.	155.7	165.3	160.5	158.7	140.9	127.6	131.3	130.9	146.3	125.4	131.2	129.4	140.0	126.4	130.6	130.1	142.9	120.5	124.1	124.4	148.0	129.5	134.6	132.5	143.7	120.1	125.1	125.1	245.3	234.3	160.2	142.4	144.5	142.8	162.8	154.8	156.3	156.5	157.2	144.8	149.5	150.0	244.7	233.5	242.5	233.1	246.7	239.4	248.2	245.9	246.9	239.4
September.	156.8	164.9	160.4	158.9	147.3	128.0	130.9	133.0	148.2	127.9	131.6	132.4	146.9	127.6	130.6	131.2	143.5	120.2	123.6	126.9	148.9	131.0	135.1	134.5	145.3	121.3	126.4	127.6	245.9	235.0	151.8	144.2	145.8	144.4	161.4	154.4	156.3	156.0	156.9	144.6	148.4	150.4	244.3	233.7	242.3	233.2	246.7	239.6	247.2	245.5	246.9	240.0
October.	161.5	165.2	160.7	159.8	152.2	129.1	131.5	134.1	153.5	128.1	133.4	134.5	151.3	129.0	133.3	133.5	147.9	122.6	125.3	128.2	155.3	134.3	137.3	137.1	150.8	121.8	127.2	129.8	246.2	234.9	156.5	144.9	145.4	145.1	161.7	155.5	157.9	158.5	156.9	144.5	149.2	151.0	244.2	233.3	242.1	231.7	247.2	239.5	248.2	245.6	247.0	239.8
November.	159.0	164.4	159.2	158.9	155.1	124.5	134.8	137.9	153.0	130.1	131.9	135.1	151.1	120.8	131.4	134.7	147.2	124.2	125.6	129.1	153.6	134.2	136.4	137.3	149.8	124.3	126.8	130.2	246.7	236.8	155.9	144.7	143.3	144.6	161.9	158.2	157.6	157.8	156.9	145.4	160.1	151.4	244.9	234.9	244.7	235.2	247.6	239.9	249.0	248.1	247.1	246.6
December.	153.6	164.5	160.6	158.6	148.1	133.7	134.5	136.5	142.7	127.0	128.4	131.0	143.3	128.0	130.2	131.3	137.3	117.1	118.6	121.5	146.4	131.5	133.5	135.9	138.7	118.0	120.7	123.9	245.4	235.5	148.7	142.8	143.0	142.8	161.4	154.8	150.4	158.2	154.3	143.3	146.8	148.3	244.7	234.9	243.5	235.3	246.3	240.3	248.5	247.4	246.2	240.6

[FROM THE CITY ENGINEER'S REPORT TO
THE STREET DEPARTMENT.]

ATLANTIC AVENUE RECONSTRUCTION.

In consequence of dredging in the dock between Central and India wharves and of the action of the propellers of the steamers using it, the filling under the sea wall at the head of the dock had fallen away and caused a settlement of the street back of the wall at this point. The face of the wall had also slid forward, leaving a large cavity about ten feet long in the middle of the wall. This cavity was filled with Portland cement concrete and stone ballast was deposited between the bulkhead and the front of the wall, and a timber bulkhead about $52\frac{1}{2}$ feet long was built on the street line. The work was done by Lawler Brothers under a contract and was completed early in July, 1905.

CONGRESS-STREET BRIDGE.

The contract made October 28 with the New England Structural Company for lengthening the steel work of the draw was completed March 20, 1905, at a cost of \$3,279.18.

A contract was made April 4, 1905, with Seth Perkins, for moving the machinery, remodelling the drawtender's house, re-decking and re-sheathing the draw, and this work was done at a cost of \$3,700. Considerable work was done in connection with finishing the draw and bridge by Seth Perkins which was not included in the above contract, at a cost of \$2,032.97. The bridge was opened to travel May 8, 1905, and the temporary bridge connecting Summer-street and Congress-street bridges was closed to travel at the same time.

COTTAGE-STREET FOOT-BRIDGE.

This bridge was partially destroyed by ice early in 1904 and was closed to travel. A contract was made October 4, 1905, with the William S. Rendle Co. for repairing the bridge, which required the driving of 166 new piles and placing new caps, stringers and planking in a large part of the bridge. The fences were painted for their entire length.

The work is completed, with the exception of painting the fences.

DOVER-STREET BRIDGE.

Plans and specifications were made for widening the draw-way about three feet to forty feet. A contract was made with the Cahill Construction Company for doing the work, which has been commenced.

EAST BOSTON FERRIES.

Coal-pocket. — Plans and specifications were made for building a coal-pocket at the East Boston landing of the North ferry to replace the present coal-shed. Bids were received October 9, and a contract was made with George Hayes, the lowest bidder, for doing the work. No work has yet been done under the contract, as the coal-shed was in use.

Areas of Cabins. — The areas of the cabins and passage-ways on all the ferry-boats have been measured.

NORFOLK-STREET BRIDGE.

The contract for building the steel superstructure for this bridge was completed by the Boston Bridge Works early in May at a cost of \$12,123.47. The South roadway was opened to travel May 13, 1905, and the North roadway at a later date.

The through steel truss bridge was built across the railroad location on a skew, resting on the abutments, which were completed the previous December; the bridge consists of three riveted steel trusses each 111 feet long, centre to centre of bearings, and 20 feet deep, centre to centre of top and bottom chords. These trusses are spaced 23 feet 3 inches on centres; the floor beams are of steel, riveted to bottoms of posts, and support a floor system of hard pine stringers and 4-inch spruce deck plank, upon which is laid a wearing surface of 2-inch spruce. The centre truss divides the roadway into two parts, each 13 feet 6 inches in the clear; there are two sidewalks each 7 feet 4 inches wide, and the total width of the bridge from centre to centre of the outside trusses is 46 feet 6 inches. The floor beams overhang the trusses 3 feet 6 inches for the purpose of supporting water and gas pipes. Provision is also made for a line of car tracks of the Boston Elevated railroad in each roadway, but the rails are not laid on the bridge at present.

STAIRWAY FROM SUMMER-STREET BRIDGE TO A STREET.

Under a contract with the New England Structural Company, a flight of stairs has been built from the southerly walk

of the bridge on Summer street to the westerly sidewalk below on A street. The work was completed early in May, 1905, at a cost of \$592.25. The foundations for the stairs were put in by D. J. Kiley and safety treads at the landings were furnished and placed by the Universal Safety Tread Company.

ASSESSMENT STREETS.

Working plans, specifications and forms of contract were prepared and forwarded to the Street Department for the construction of the following assessment streets :

Beaufort road, Centre street about 467 feet westerly.

Clement avenue, Flora street to Stratford street.

Flora street, Kenneth street to Clement avenue.

PLANS AND SPECIFICATIONS FOR REPAVING STREETS.

Preliminary surveys were made and working plans, specifications and forms of contract were prepared and forwarded to the Street Department for repaving the following streets :

Albany street, Beach street to Kneeland street.

Albany street, Massachusetts avenue about 225 feet northerly.

Allen street, Chambers street to Charles street.

* *Allston street*, Brighton avenue to Washington street.

Ash street, Bennet street to Nassau street.

Atlantic avenue (westerly side), Broad street to Commercial street.

Bennet street, Ash street to Harrison avenue.

Blackstone street, Hanover street to Haymarket square.

Bolton street, C street to D street.

Boylston street, Massachusetts avenue to the Parkway.

Causeway street, Nashua street across Lowell street.

Chatham row, State street to Chatham street.

Chatham street, Merchants row to Commercial street.

* *Chelsea street*, Mt. Vernon street to Vine street.

Clarendon street, Beacon street to Boylston street.

Devonshire street, Milk street to Franklin street.

Dorchester street, Broadway to Eighth street.

* *East First street*, K street to L street.

Eliot street, Tremont street to Washington street.

Essex street, Chauncy street to Lincoln street.

Harrison avenue, Bedford street to Essex street.

Harrison avenue, Beach street to Kneeland street.

Harrison avenue, Gloucester place to Decatur street.

Harrison avenue, East Springfield street to Northampton street.

* *Harvard street*, Gleason street to School street.

* Plans only were forwarded.

- * *Hoverhill street*, Haymarket square to Traverse street.
- Hayward place*, Washington street to Harrison avenue.
- Huntington avenue*, Dartmouth street to B. & A. R.R. bridge.
- McLean street*, Chambers street to Blossom street.
- Norfolk street*, N. Y., N. H. & H. R.R. bridge to Morton street.
- * *Norfolk avenue*, Magazine street to Marshfield street.
- Northampton street*, Shawmut avenue to Washington street.
- * *Northampton street*, Washington street to Harrison avenue.
- St. Alphonsus street*, Tremont street to Smith street.
- Salutation street*, Hanover street to Commercial street.
- * *Silver street*, F street to Dorchester street.
- South street*, Essex street to Beach street.
- Thomas park*, South Boston.
- Tileston street*, Hanover street across Unity street.
- * *Topliff street*, Bowdoin street to Westville street.
- Tyler street*, Beach street to Harvard street.
- Tyler street*, Oak street to Curve street.
- * *Warren street*, Cambridge street to the Brookline line.
- West Broadway*, at Dorchester street.
- * *West First street*, A street to Dorchester avenue.
- West Sixth street*, C street to D street.
- Wiggin street*, North Bennet street to Tileston street.

MISCELLANEOUS.

Preliminary surveys have been made and plans prepared for repaving the following streets :

- A street*, West First street across Richards street.
- Albany street*, Kneeland street to B. & A. R.R. bridge.
- Albany street*, Broadway to Dover street.
- Armandine street*, Washington street to Milton avenue.
- Beach street*, Freeport street to Park street.
- Blackstone street*, North street to Clinton street.
- Causeway street*, Leverett street to Lowell street.
- Centre street*, Adams street to Dorchester avenue.
- Congress street*, Congress-street bridge to existing concrete base paving.
- Congress street*, Congress-street bridge to N. Y., N. H. & H. R.R. tracks.
- Cross street*, Fulton street to Commercial street.
- Dorchester avenue*, Congress street to Summer street.
- Eliot street*, Tremont street to Pleasant street.
- Evans street*, Morton street to Milton avenue.
- Evelyn street*, Norfolk street to Blue Hill avenue.
- Fleet street*, Hanover street to Commercial street.
- Geneva avenue*, Bowdoin street to Park street.
- Guild row*, Roxbury street to Dudley street.
- Hampden street*, Albany street to Dudley street.

* Plans only were forwarded.

Hanover street, Union street to Parmenter street.
Harvard avenue, Cambridge street to Commonwealth avenue.
Harvard street, Harrison avenue to Albany street.
Haverhill street, Traverse street to Causeway street.
Henry street, Paris street to Maverick square.
K street, First street 437 feet northerly.
Marlborough street, Clarendon street to Exeter street.
Maverick square, westerly side.
Nelson street, Norfolk street to Selden street.
North street, Blackstone street to Commercial street.
Northampton street, Tremont street to Shawmut avenue.
Park street, Dorchester avenue to Adams street.
Richmond street, Commercial street to Atlantic avenue.
River street, Mattapan square to Hyde Park line.
Robinson street, Adams street to Draper street.
Roxbury street, Guild row to Shawmut avenue.
Rutherford avenue, Chapman street to Cambridge street.
Selden street, Milton avenue to Morton street.
Stanwood street, Blue Hill avenue to Columbia road.
Washington street, Elm street to Hanover street.
Washington street, Dudley street to Arnold street.

MISCELLANEOUS PLANS, SPECIFICATIONS, ETC.

Almont street, Dorchester. A plan was prepared showing a revised grade, for a portion of the street, starting about 900 feet west of Blue Hill avenue and extending about 500 feet westerly.

Atlantic avenue (westerly side), Broad street to Commercial street. Plans and specifications were prepared for widening the westerly roadway about 4.8 feet by taking a like amount from the sidewalk.

Freeport street (easterly side), plans and specifications were prepared for a granite rubble retaining wall about 350 feet long and from 11 feet to 13.8 feet high.

Norfolk street, at Mascot street. A plan and specifications were prepared for a wooden bulkhead.

Washington street, Townsend street to School street. Plans and grades were prepared for making the sidewalk uniformly 10 feet wide.

GRADING STREET RAILWAY TRACKS.

Grades for tracks in the following streets have been determined and the necessary surveys made for determining the same :

BOSTON ELEVATED RAILWAY COMPANY.

Atlantic avenue, westerly side.
Blue Hill avenue, Norfolk street to River street.
Boylston street, Massachusetts avenue to the Parkway.

Broadway, at Dorchester street.
Centre street, South Huntington avenue to Pond street.
Chelsea street, Saratoga street to Chelsea-street bridge.
Cheslea street, Mt. Vernon street to Vine street.
Dorchester street, Broadway to Eighth street.
Eliot street, Pleasant street to Washington street.
Guild row, Roxbury street to Dudley street.
Hampden street, Albany street to Dudley street.
Hanover street, Union street to Parmenter street.
Harrison avenue, East Springfield street to Northampton street.
Haverhill street, Haymarket square to Causeway street.
Huntington avenue, Dartmouth street to B. & A. R.R. bridge.
Maverick square, westerly side.
Northampton street, Tremont street to Shawmut avenue.
Northampton street, Washington street to Shawmut avenue.
Northampton street, Washington street to Harrison avenue.
Prentiss street, Columbus avenue to Tremont street.
River street, Mattapan square to Hyde Park line.
Roxbury street, Guild row to Shawmut avenue.
Shelby street, Lexington street to Saratoga street.
Talbot avenue, Washington street to Dorchester avenue.
Washington street, Elm street to Hanover street.
Washington street, Dudley street to Arnold street.
Washington street, Columbia road to Kilton street.
Washington street, Enclid street to Ashmont street.
West Sixth street, C street to D street.

NEW YORK, NEW HAVEN & HARTFORD RAILROAD.

West First street, A street to Granite street.

Total length of single track grades, 10 miles.

Plans showing details of construction of streets and other structures have been made from time to time as required. The Street Book giving lengths and areas of pavements in accepted streets and public alleys has been corrected to February 1, 1905, and is now being brought up to February 1, 1906.

MISCELLANEOUS WORK AND CONSTRUCTION, 1905.

ATLANTIC-AVENUE BRIDGE.

The Pennsylvania Steel Co. began the work of erecting the steel superstructure for the fixed portion of this bridge early in May, under its contract dated November 1, 1904. This work was completed on November 20, with the exception of a portion of the painting.

On July 29, 1905, a contract was made with Patrick McGovern for the flooring of the bridge with the exception of the draw. Work under this contract was begun on September 14, and is now in progress. The surfacing of the South Boston approach to the bridge was included in the above contract.

On August 23 a contract was made with the James Russell Boiler Works Co. for the construction and erection of the railings on the bridge and approaches. The work of erecting the railing was begun on December 7, and is not yet completed.

Plans and specifications were prepared for building the wooden draw-pier, and on November 14 a contract was made with Lawler Brothers for doing the work. Work was begun on January 8, 1906, and was in progress on January 31.

BROOKLINE-STREET BRIDGE.

Early in the year plans and specifications were prepared for rebuilding this bridge and its approaches from Commonwealth avenue to the Cambridge abutment.

On June 3, 1905, a contract was made with the James J. Coughlan Construction Co. for building abutment and retaining walls on the approach. The work is completed. It consists of an abutment near the Grand Junction branch of the Boston & Albany railroad, with side walls on the street line extending back to the northerly line of Commonwealth avenue. The abutment is 62 feet 8 inches long on top, the easterly wall is 239 feet 3 inches long, and the westerly wall 235 feet 6 inches long on top. For a length of 156 feet 3 inches on the easterly wall and 190 feet 6 inches on the westerly wall the foundation is the natural soil, the remainder

of the side walls and the abutment having a foundation of spruce piles driven 2 feet apart on centres each way. The walls vary in height from 18.8 feet to 34 feet. The width of the foundation course of masonry varies from 11 to 17 feet and its height from 3 feet to 5 feet. The walls above the foundation vary in width at the bottom from 4 feet to 6 feet, the top width of the side walls being 2 feet under the coping, which latter is 1 foot 6 inches high by 2 feet 4 inches wide, overhanging the vertical face of the wall 4 inches. The abutment is 4 feet 4 inches wide at the top of the bridge seat, which is at grade 35.87; the bridge seat overhangs the vertical face of the abutment 4 inches. A parapet wall extends from the bridge seat to the grade of the street, and is capped by a single course of granite 1 foot 6 inches by 1 foot 6 inches in section.

The masonry, except the top course of the abutment, is entirely of Portland cement concrete reinforced with twisted steel bars. The foundation course projects beyond the wall above both in front and rear, and is reinforced with bars laid crosswise of the wall 6 inches above the bottom of the concrete, the bars being in size from $\frac{3}{4}$ inch to $1\frac{1}{2}$ inches square, and being spaced from 4 to 12 inches apart.

The upper part of the wall is reinforced with rods, placed 3 inches from the rear face and extending from the bottom of the foundation to within 5 feet of the top of the wall. The size of these rods varies from $\frac{5}{8}$ inch to 1 inch square and they are spaced from 4 to 18 inches apart. No rods were placed lengthwise of the walls.

The walls are ballasted with stone chips or old brick, the ballast sloping from the bottom of the coping on a slope of 1 to 1.

The walls were built in alternate sections, each about 50 feet in length, in order to localize any vertical cracks which might occur on account of temperature changes.

On September 15, a contract was made with W. H. Ellis for building the pile and trestle work of the bridge. This work was begun on September 25, and is still in progress.

On November 3 a contract was made with H. P. Converse & Co. for building the steel work of five spans. No work under this contract was done on the ground during the year.

On July 21, 1905, a contract was made with P. J. Dinn & Co. for furnishing and erecting the iron railings on the side walls of the approach to the bridge. This work was not completed on January 31.

On October 9, 1905, a contract was made with W. H. Ellis for dredging a new channel in line with the new

channel opening in the bridge. This new channel extends from a point about 250 feet below the bridge to a point about 1,100 feet above the bridge connecting at either end with the old channel. The amount of material dredged was 17,887 cubic yards, scow measurement, at a cost of \$6,081.58. Work was begun on October 19, 1905, and finished January 9, 1906. The grade of the bottom of the new channel is grade -7.36 City base.

DUDLEY-STREET GRADE CROSSING.

Early in the year the plans and estimates for the abolishment of this crossing were revised.

DORCHESTER GRADE CROSSINGS.

Several estimates and plans have been made for the abolishment of the grade crossings on the Old Colony Division of the New York, New Haven & Hartford railroad in the vicinity of the Harrison square, Fields corner, and Neponset stations.

EAST BOSTON GRADE CROSSINGS.

The abolishment of the grade crossings on the Boston & Albany and Boston & Maine Railroads in East Boston has continued during the year in accordance with the report of the special commission appointed by the Superior Court, the report being dated February 11, 1904.

The Boston & Albany Railroad Co. has completed the abutments for the bridges at Porter, Prescott, Bennington, and Curtis streets, with the exception of the parapets.

The following streets have been sub-graded in accordance with the new street grades: Prescott street south of the railroad, with the approaches on Orleans street; Neptune road, with the approaches on Orleans street, and Bennington street south of the railroad. Some filling has also been done on Porter and Curtis streets.

GALLOPS ISLAND.

At the request of the Board of Health an examination was made of the westerly wharf, which had been damaged by the storm of January 25. Plans and specifications were made for repairing the wharf and building a concrete abutment and retaining wall. The work was done by the Cabill Construction Co. and was completed April 26 at a cost of \$1,179.

An examination was made of the easterly wharf and specifications were written for renewing ten piles, the hard pine capsill, a small part of the planking, and doing some general repairing; also for furnishing three belay bitts and one fender pile in the westerly wharf. The work was let to W. L. Miller and completed late in November at a cost of \$685.80.

NORTHERN-AVENUE BRIDGE.

Under chapter 381 of the Acts of 1903, the City Engineer was directed to build a bridge across Fort Point channel on the lines of Northern avenue as laid out in that act.

The plans for the construction of the bridge were approved by the Board of Harbor and Land Commissioners, July 18, 1904, and the necessary authority for its construction was obtained from the Secretary of War, as given in the following license:

Whereas, By Section 9 of an Act of Congress, approved March 3, 1899, entitled "An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes," it is provided that bridges, dams, dikes, or causeways may be built under authority of the Legislature of a State across rivers and other waterways, the navigable portions of which lie wholly within the limits of a single State, provided the location and plans thereof are submitted to and approved by the Chief of Engineers, and by the Secretary of War, before construction is commenced.

And whereas, The City of Boston, Massachusetts, having authority of the Legislature of the State of Massachusetts to construct a bridge across Fort Point channel at Boston, in said State, has submitted a map of the location and plans of the same, which have been approved by the Chief of Engineers.

Now therefore, This is to certify that the map of location and plans of said bridge, which are hereto attached, are hereby approved by the Secretary of War, subject to the following conditions:

That the engineer officer of the United States Army, in charge of the district within which the bridge is to be built, may supervise its construction, in order that said plans shall be complied with.

Witness my hand this eleventh day of April, 1905.

ROBERT SHAW OLIVER,
Assistant Secretary of War.

WAR DEPARTMENT,
WASHINGTON, D. C., April 11, 1905.

SIR, — Referring to your application of July 20th last I transmit, herewith, for retention, an instrument, approving the map of location and plans of a bridge to be constructed by the City of Boston across the Fort Point channel at Boston, Massachusetts, in conformity with License 2869 from the Harbor and Land Commissioners of the Commonwealth of Massachusetts, subject to the conditions set forth in said War Department instrument.

Very respectfully,

ROBERT SHAW OLIVER,
Assistant Secretary of War.

HON. P. A. COLLINS, *Mayor*, Boston, Mass.

Plans and specifications for the substructure of the bridge were prepared early in the year and received the approval of the Harbor and Land Commissioners. On July 31, 1905, a contract was made with W. H. Ellis of Boston for building the abutment on the westerly side of Fort Point channel, the three masonry piers in the channel and the foundation for the draw-pier, together with the necessary fender-pier and fender-guards.

The contract calls for the completion of the work by November 1, 1906. Work was begun September 7, 1905, and has been prosecuted during the winter. At the date of this report the piles for the draw foundation and the plank curbing for the concrete are in place and a large amount of work has been done on the timber fender-pier.

RAINSFORD ISLAND.

The storm of January 25, 1905, did considerable damage to the pile bulkheads on this island, and at the request of the Children's Institutions Department plans and specifications were made for rebuilding the bulkheads and for repairing the wharf. Bids were received December 14 for doing the work, but the contract has not yet been executed.

VOTING BOOTHS.

Plans were made in April for building wooden voting booths similar to those built in 1903; they were built under the direction of the Election Department.

Respectfully submitted,

WILLIAM JACKSON,
City Engineer.

CITY ENGINEERS.

1850-1906.

E. S. CHESBROUGH, M. Am. Soc. C. E.,
November 18, 1850, to October, 1855.
(Died August 18, 1886.)

JAMES SLADE,
October 1, 1855, to April 1, 1863.
(Died August 25, 1882.)

N. HENRY CRAFTS,
April 1, 1863, to November 25, 1872.

JOSEPH P. DAVIS, M. Am. Soc. C. E.,
November 25, 1872, to March 20, 1880.
(Resigned March 20, 1880.)

HENRY M. WIGHTMAN, M. Am. Soc. C. E.,
April 5, 1880, to April 3, 1885.
(Died April 3, 1885.)

WILLIAM JACKSON, M. Am. Soc. C. E.,
April 21, 1885, to the present time.

APPENDICES.

APPENDIX A. — Table showing the widths of openings for vessels in all bridges provided with draws.

APPENDIX B. — Table of accident and other plans made for the Law Department from February 1, 1905, to February 1, 1906.

APPENDIX C. — Table of surveys, plans, and profiles made by the Surveying Division of the Engineering Department from February 1, 1905, to February 1, 1906.

APPENDIX D. — Lists of streets where frontages have been obtained for the Sewer Division of the Street Department, for Sewer Assessments, from February 1, 1905, to February 1, 1906.

APPENDIX E. — Engineering Department property schedule.

APPENDIX F. — Elevations referred to Boston City base.

APPENDIX G. — Engineering Department Annual Reports, 1867-1905.

APPENDIX H. — Engineering Department, Revised Ordinances.

APPENDIX I. — Meridian Line.

APPENDIX J. — Grades of Streets.

APPENDIX K. — Widths of Streets.

Grand Junction R.R.	Brighton to Cambridge	1	40	0
" "	East Boston to Chelsea.	1	49	0
Granite	Dorchester to Milton.	1	36	0
Harvard (Boston side)	Boston to Cambridge.	2	36	6
" (Cambridge side)	"		36	10
L-st.	Over Reserved channel, South Boston.	1	39	8
Malden.	Charlestown to Everett.	1	50	0
Meridian-st. (East Boston side)	East Boston to Chelsea.	2	59	2
" (Chelsea side)	"		59	0
Mt. Washington-ave. (Boston side)	Over Fort Point channel.	2	42	2
" (South Boston side)	"		50	0
Neponset.	Dorchester to Quincy	1	36	0
N. Y., N. II. & H. R.R.	Over Fort Point channel.	1	41	5
" " Y-connection.	"	1	41	10
" " Old Colony Division	Dorchester to Quincy	1	† 35	7
North Beacon-st.	Brighton to Watertown.	1	30	0
North Harvard-st.	Brighton to Cambridge.	1	36	0
Prison-point	Charlestown to Cambridge.	1	35	5
Summer-st.	Over Fort Point channel.	1	50	0
Warren	Boston to Charlestown.	1	36	0
West Boston	Boston to Cambridge	1	36	0
Western-ave	Brighton to Cambridge.	1	36	0
"	Brighton to Watertown	1	35	10

* Widened to 40 feet since January, 1906.

† Widened to 43 feet since January, 1906.

† Essex-street bridge has been removed and replaced by Brookline-street bridge, which has no draw, but has an opening 40 feet wide, and a height of 26 feet above mean high water.

APPENDIX B.

TABLE OF ACCIDENT AND OTHER PLANS MADE FOR THE
LAW DEPARTMENT, FROM FEBRUARY 1, 1905, TO FEBRU-
ARY 1, 1906.

BOSTON PROPER.

<i>Appleton street.</i>	Plan of street in front of No. 28.
<i>Bedford street.</i>	Plan of street opposite No. 35.
<i>Bowdoin street.</i>	Plan of street at corner of Derne street.
<i>Boylston street.</i>	Plan of street in front of No. 84.
<i>Boylston street.</i>	Plan of street in front of No. 120.
<i>Boylston street.</i>	Plan of street in front of No. 423.
<i>Boylston street.</i>	Plan of street in front of No. 987.
<i>Boylston street.</i>	Plan of street at corner of Clarendon street.
<i>Bromfield street.</i>	Plan of street in front of No. 34.
<i>Bromfield street.</i>	Plan of street in front of No. 56.
<i>Cambridge street.</i>	Plan of street in front of No. 34.
<i>Causeway street.</i>	Plan of street opposite Canal street.
<i>Causeway street.</i>	Plan of street in front of No. 85.
<i>Chambers street.</i>	Plan of street near Charles street.
<i>Chandler street.</i>	Plan of street in front of No. 58.
<i>Columbus avenue.</i>	Plan of street at corner of Dartmouth street.
<i>Commercial street.</i>	Plan of street in front of No. 132.
<i>Craigie bridge.</i>	Plan of roadway and sidewalk.
<i>Cross street.</i>	Plan of street at corner of Commercial street.
<i>Dartmouth street.</i>	Plan of street at St. James avenue.
<i>East Concord street.</i>	Plan of street at Homœopathic Hospital.
<i>Eliot street.</i>	Plan of street in front of No. 67.
<i>Emerald street and Castle street.</i>	Plan of street at corner.
<i>Essex street.</i>	Plan of street in front of No. 15.
<i>Fleet street.</i>	Plan of street near Hanover street.
<i>Garden street and Revere street.</i>	Plan of street at corner.
<i>Grove street and Revere street.</i>	Plan of street at corner.
<i>Harrison avenue.</i>	Plan of street in front of No. 176.
<i>Harrison avenue.</i>	Plan of street at corner of Nassau street.
<i>Harrison avenue.</i>	Plan of street at corner of Waltham street.
<i>Harrison avenue.</i>	Plan of street at corner of Worcester square.
<i>Kingston street.</i>	Plan of street in front of No. 71.
<i>Massachusetts avenue.</i>	Plan of street near Hotel Trafalgar.
<i>Meander street.</i>	Plan of street in front of No. 17.
<i>Merrimac street.</i>	Plan of street in front of No. 125.
<i>Milk street.</i>	Plan of street at Hawley street.
<i>Motte street.</i>	Plan of street near Washington street.
<i>Parkman street.</i>	Plan of street near North Russell street.
<i>Pleasant street.</i>	Plan of street near subway entrance.

- Phipps place.* Plan of street showing surface.
Poplar street. Plan of street in front of No. 170.
Portland street. Plan of street in front of No. 21.
Public alley No. 444. Plan of street.
School street. Plan of street in front of No. 20.
School street. Plan of street near Tremont street.
Scollay square. Plan of street at East Bosten tunnel entrance.
Shawmut avenue. Plan of street at Castle street.
Shawmut avenue. Plan of street at Pembroke street.
Shawmut avenue. Plan of street at Northampton street.
Shawmut avenue. Plan of street in front of No. 647.
State street. Plan of street in front of No. 6.
Summer street. Plan of street at Arch street.
Summer-street Draw. Plan of roadway and sidewalk.
Tremont street. Plan of street at Boylston street.
Tremont street. Plan of street at Berkeley street.
Walnut street. Plan of street in front of No. 4.
Washington street. Plan of street in front of No. 216.
Washington street. Plan of street at corner of Bedford street.
Washington street. Plan of street at corner of Norfolk place.
Washington street. Plan of street at corner of Hayward place.
Washington street. Plan of street in front of No. 572.
Washington street. Plan of street at Boylston street.
Washington street. Plan of street at Harvard street.
Washington street. Plan of street at Cobb street.
Washington street. Plan of street in front of No. 1044.
Washington street. Plan of street in front of No. 1077.
Washington street. Plan of street at Garland street.
Washington street. Plan of street at Waterford street.
Washington street. Plan of street at corner of Brookline street.
West Rutland square. Plan of street in front of No. 78.
West Springfield street. Plan of street in front of No. 22.
West Springfield street. Plan of street in front of No. 92.

SOUTH BOSTON.

- D street.* Plan of street in front of No. 123.
D street. Plan of street at corner of Silver street.
East Broadway. Plan of street in front of No. 493.
East Broadway. Plan of street in front of No. 575.
I street. Plan of street in front of No. 192.
Sleeper street. Plan of street near Congress street.
West Fourth street. Plan of street in front of No. 311.

EAST BOSTON.

- Byron street.* Plan of street at Horace street.
Chelsea street. Plan of street in front of No. 36.
Lexington street. Plan of street at Princeton street.
Leyden street. Plan of street in front of No. 182.
Marginal street. Plan of street in front of No. 80.

Saratoga street. Plan of street in front of No. 551.

Summer street. Plan of street at railroad crossing.

CHARLESTOWN.

Bow street and vicinity. Plan of, for court.

Chapman street. Plan of street at Rutherford avenue.

Main street. Plan of street in front of No. 178.

ROXBURY.

Audubon road. Plan of street near Beacon street.

Bower street. Plan of street at Humboldt avenue.

Brookline avenue. Plan of street at Kenwood road.

Columbus avenue. Plan of street in front of Police Station No. 10.

Hampden street. Plan of street in front of No. 68.

Kenwood road. Plan of street in front of school-house.

King street. Plan of street in front of Elmwood Brewery.

Northfield street. Plan of street in front of No. 33.

Parker street. Plan of street in front of No. 552.

Putnam street. Plan of street near Dudley street.

Ruggles street. Plan of street near Huntington avenue.

Swett street. Plan of street at Burnham street.

Warren street. Plan of street in front of No. 115.

Warren street. Plan of street in front of Hotel Warren.

Washington street. Plan of street in front of No. 2005.

Watson street. Plan of street in front of Hotel Baldwin.

Zeigler street. Plan of street in front of No. 86.

DORCHESTER.

Ashmont street. Plan of street at Washington street.

Bailey street. Plan of street in front of No. 63.

Boston street. Plan of street in front of No. 18.

Boston street. Plan of street at railroad bridge.

Columbia road. Plan of street at Stoughton street.

Dorchester avenue. Plan of street at Crescent avenue.

East street. Plan of street in front of No. 14.

Erie street. Plan of street at Seaver street.

Hancock street. Plan of street in front of No. 200.

Park street. Plan of street at Dorchester avenue.

Oakland street. Plan of vicinity, for court.

River street. Plan of street near Manchester street.

WEST ROXBURY.

Chestnut avenue. Plan of street at Wyman street.

Corinth street. Plan of vicinity, for court.

BRIGHTON.

Commonwealth avenue. Plan of street at Babcock street.

Commonwealth avenue. Plan of street at Warren street.

Nonantum street. Plan of street at school lot.

APPENDIX C.

TABLE OF SURVEYS, PLANS AND PROFILES MADE BY THE
SURVEYING DIVISION OF THE ENGINEERING DEPART-
MENT FROM FEBRUARY 1, 1905, TO FEBRUARY 1, 1906.

BOSTON PROPER.

(North of Massachusetts avenue.)

- Albany street*, southwesterly corner East Concord street. Plan showing City Hospital building.
- Arlington street*, at Boylston street. Plan and profile for proposed grade at Public Garden.
- Batterymarch street*, High street to Wendell street. Plan and profile for grade.
- Beacon street*, Charles street to Arlington street. Plan and profile for proposed grade.
- Beacon street*, Commonwealth avenue to No. 480. Plan and profile for proposed grade.
- Billerica street*, Causeway street to Minot street. Plan and profile for proposed grade.
- Boylston street*, at Arlington street. Plan and profile for proposed grade at Public Garden.
- Change avenue*. Plan and profile for proposed grade.
- Chardon street*, northerly corner Green street. Plan and profile for proposed grade.
- Chestnut street*, Walnut street to Charles river. Plan showing fronts, steps, etc.
- Columbus avenue*, Clarendon street to Dartmouth street. Plan and profile for proposed grade.
- Corning street*, Shawmut avenue to Tremont street. Plan showing encroachment of steps.
- Devonshire street*, southwesterly corner Adams square. Plan and profile for proposed grade.
- Essex street*, at Washington street. Plan and profile for proposed grade.
- Green street*, northerly corner Chardon street. Plan and profile for proposed grade.
- Harrison avenue*, Troy street to Dover street. Plan and profile for proposed grade.
- Hayward place*, southerly corner Washington street. Plan and profile for proposed grade.
- High street*, Batterymarch street to Oliver street. Plan and profile for proposed grade.

- Irving street*, Myrtle street to Cambridge street. Plan and profile for proposed grade.
- Lucas street*, Washington street to Shawmut avenue. Plan and profile for laying out and established grade.
- Lucas street*, Middlesex street to Tremont street. Plan and profile for laying out and established grade.
- Milk street*, southwesterly side Arch street to Devonshire street. Plan showing estates and proposed grade.
- Mystic street*, at Brookline street. Plan and profile for proposed grade.
- Newland street*, West Brookline street to Trumbull street. Plan and profile for proposed grade.
- North Bennet street*, at Salem street. Plan and profile for proposed grade.
- North Russell street*. Plan and profile for proposed grade.
- Parkman street*, North Russell street to Blossom street. Plan and profile for proposed grade.
- Pemberton square*, at Tremont row. Plan and profile for proposed grade.
- Pembroke street*, Shawmut avenue to Columbus avenue. Plan and profile for proposed grade.
- Pitts street*. Plan and profile for proposed grade.
- Pleasant street*, Tennyson street to Eliot street. Plan and profile for laying out and established grade.
- Public Garden*, corner Boylston street and Arlington street to Pond. Plan and profile for Public Grounds Department.
- Oliver street*, High street to Wendell street. Plan and profile for proposed grade.
- Rutland square*. Plan and profile for proposed grade.
- Salem street*, Prince street to North Bennet street. Plan and profile for proposed grade.
- South Market street*, Commercial street to Atlantic avenue. Plan and profile for proposed grade.
- South Russell street*, Myrtle street to Cambridge street. Plan and profile for proposed grade.
- Tennyson street*. Plan and profile for proposed grade.
- Washington street*, southeasterly side, Essex street to Hayward place. Plan and profile for proposed grade.
- Washington street*, northeasterly side, Lagrange street to Boylston street. Plan and profile for proposed grade.
- Washington street*, easterly side, East Canton street to East Brookline street. Plan and profile for proposed grade.
- Wendell street*, Batterymarch street to Oliver street. Plan and profile for proposed grade.
- West Brookline street*, Shawmut avenue to Tremont street. Plan and profile for proposed grade.
- West Cedar street*, Cambridge street to Revere street. Plan and profile for proposed grade.
- West Rutland square*. Plan and profile for proposed grade.
- Winchester street*, southerly side, Church street to Ferdinand street. Plan and profile for proposed grade.

SOUTH BOSTON.

- Columbia road*, Locust street to Q street. Plan showing estates for assessment.
- Dorchester street*, West Broadway to West Eighth street. Plan and profile.
- East Second street*, L street to M street. Plan for sidewalk assessment.
- G street*, East Eighth street to Columbia road. Plan for sidewalk assessment.
- K street*, East Ninth street to Columbia road. Plan for sidewalk assessment.
- Mercer street*, East Eighth street to Columbia road. Plan for sidewalk assessment.
- Mt. Washington avenue*, Granite street to A street. Plan and profile showing the proposed laying out and established grade.
- Vale street*, Dorchester street to Columbia road. Plan for sidewalk assessment.
- West Fifth street*, F street to Dorchester street. Plan and profile.
- West Fourth street*, F street to Dorchester street. Plan and profile.

EAST BOSTON.

- Bremen street*, Marion street to Brooks street. Plan and profile for revised grade.
- Bremen street*, Brooks street to Putnam street. Plan and profile for revised grade.
- Orleans street*, Gove street to Bennington street. Plan and profile for laying out and established grade.
- Pope street*, Curtis street to Moore street. Plan and profile for revised grade.
- Saratoga street*, Swift street to Moore street. Plan for sidewalk assessment.
- Shelby street*, north side, Lexington street to Saratoga street. Plan and profile for revised grade.
- Shelby street*, Lexington street to Saratoga street. Plan for sidewalk assessment.

CHARLESTOWN.

- Elm street*, Bartlett street to Medford street. Plan and profile for proposed grade.
- Everett street*, Bunker Hill street to Medford street. Plan and profile for proposed grade.
- Green street*, northerly side at Main street. Plan and profile for proposed grade.
- Henley street*, Nos. 89, 91 and 93. Plan and profile for proposed grade.
- Hickory avenue*, Ferrin street to Jackson street. Plan and profile for proposed grade.

- Hudson street*, Chelsea street to Water street. Plan and profile for proposed grade.
- Lexington street*, Bunker Hill street to Medford street. Plan and profile for proposed grade.
- Main street*, easterly side, Green street to Wood street. Plan and profile for proposed grade.
- Mason street*, Bow street to Front street. Plan and profile for proposed grade.
- Water street*, at Hudson street. Plan and profile for proposed grade.
- Wood street*, southerly side, at Main street. Plan and profile for proposed grade.

ROXBURY.

(South of Massachusetts avenue.)

- Alley*, off Oxford terrace. Plan and profile for proposed grade.
- Ambrose street*. Plan showing land taken for school purposes.
- Batavia street*, St. Stephen street to Hemenway street. Plan and profile for proposed grade.
- Beech Glen street*, Fort avenue to bend. Plan and profile for proposed grade.
- Bellevue street*, Park street to Francis street. Plan and profile for proposed grade.
- Brookline avenue*, at Boylston street. Plan showing levels.
- Columbus avenue*, Riverside street to Cottage place. Plan and profile for proposed grade.
- Dudley street*, Winslow street to Dearborn street. Plan and profile for proposed grade.
- Dunreath street*. Plan showing land taken for school purposes.
- Fullerton street*. Plan and profile for proposed grade.
- Highland avenue*, Linwood street to Centre street. Plan and profile for proposed grade.
- Hunneman street*, southerly corner Harrison avenue. Plan showing sidewalk, fences, slope, etc.
- Louise Park*, off Copeland street. Plan and profile for laying out and established grade.
- Mountfort street*, Beacon street to Arundel street. Plan and profile for proposed grade.
- Norfolk avenue*, near Magazine street. Plan and profile for proposed grade in school yard.
- Parker Hill avenue*, at Baptist Hospital. Plan and profile for proposed grade.
- Roxbury street*, southerly side, Washington street to Guild row. Plan and profile for proposed grade.
- Vila street*. Plan and profile for proposed grade.
- Walnut avenue*, southeasterly side, Townsend street to Harrishof street. Plan and profile for proposed grade.
- Washington street*, southwesterly corner Roxbury street. Plan and profile for proposed grade.

DORCHESTER.

- Ashmont street*, Adams street to Neponset avenue. Plan for sidewalk assessment.
- Cedar street*, from River street. Profile for proposed grade.
- Codman street and Carruth street*, northeasterly corner. Plan for proposed widening.
- Columbia road*, at Hamilton street. Plan showing discontinuance.
- Columbia road*, at Atherton school. Plan showing discontinuance.
- Dawson street*, Mallet street to Templeton street. Plan and profile for laying out and established grade.
- Dorchester avenue*, Hancock street to Linden street. Plan showing encroachments.
- Dorchester avenue*, Hancock street to Leedsville street. Plan for sidewalk assessment.
- Dorchester avenue*, Roach street to Savin Hill avenue. Plan for sidewalk assessments.
- Dudley street*, Humphreys street to Magnolia street. Plan for widening.
- Fuller street*, Dorchester avenue to Washington street. Plan for sidewalk assessments.
- Harvard street*, Kilton street to School street. Plan for sidewalk assessments.
- Lithgow street*, east of Talbot avenue. Plan for addition to high school lot.
- Mt. Vernon street*, Dorchester avenue to Shoreham street. Plan for sidewalk assessments.
- Prescott place*. Profile for proposed grade.
- River street*, Fremont street to Riverside place. Profile for proposed grade.
- River street*, Blue Hill avenue to Hyde Park line. Plan showing street lines.
- School street*, Athelwold street to Harvard street. Plan for sidewalk assessments.
- Standish street*, No. 5. Plan for sidewalk assessment.
- Topliff street*, Bowdoin street to Westville street. Plan for sidewalk assessments.

WEST ROXBURY.

- Augustus avenue*, from Metropolitan avenue, southwesterly. Profile to fix grade.
- Beaufort road*. Plan and profile for laying out and established grade.
- Beech street*, Washington street to Poplar street. Profile to fix grade.
- Brown avenue*, Poplar street to Ashland street. Plan for sidewalk assessment.
- Brown avenue*, Ridge street to Ashland street. Plan for sidewalk assessment.

Centre street, opposite Glendale road. Plan showing trees, poles, etc.

Flora street, Kenneth street to Clement avenue. Plan and profile showing proposed laying out and established grade.

Flora street. Plan showing estates for assessment.

Florence street and Blakemore street. Plan for sidewalk assessment.

Metropolitan avenue, Nos. 111 to 154. Profile to fix grade.

Roosevelt avenue, Newbern street to Ashland street. Plan and profile showing proposed laying out and established grade.

Washington street, Metropolitan avenue to Dedham line. Preliminary plan showing proposed widening.

BRIGHTON.

Academy Hill road, Washington street to Chestnut Hill avenue. Plan and profile showing edgestone to fix grade.

Ashford street, Pratt street to Malvern street. Plan for sidewalk assessment.

Essex street, Commonwealth avenue to Charles river. Plan and profile for widening.

Evergreen Cemetery. Survey of all burial lots to determine areas.

Henshaw street, Cambridge street to No. 19. Plan for sidewalk assessment.

Royal street, at Cambridge street. Plan and profile showing relocation.

BOSTON HARBOR.

Long Island. Plan showing a portion of the easterly shore, wharf and buildings.

APPENDIX D.

LIST OF STREETS WHERE ESTATE MEASUREMENTS HAVE BEEN OBTAINED FOR THE SEWER DIVISION OF THE STREET DEPARTMENT FOR SEWER ASSESSMENTS, FROM FEBRUARY 1, 1905, TO FEBRUARY 1, 1906.

BOSTON PROPER.

(North of Massachusetts avenue.)

Atlantic avenue. South Market street to Commercial wharf.
Back street. Otter street to Hereford street.
Barton court. Brighton street to Barton street.
Causeway street. Merrimac street to Wall street.
Chambers street. Chambers-street court to sixty feet north.
Charles street. From Revere street, about two hundred thirty feet north.
Charter street. Phipps place to Marshall place.
Court square. Westerly side.
East Canton street. Andrews street to Thorne street.
Harrison avenue. Kneeland street to Knapp street.
Harrison avenue. Oak street to Maple place.
Hereford street. Beacon street to Back street.
Hull street. Commercial street to Snowhill street.
Knapp street. Harrison avenue to one hundred sixty feet north-west.
Lovering place. Washington street to Harrison avenue.
Otter street. Beacon street to Back street.
Passageway. From Norway street to West Newton street.
Providence street. Berkeley street to two hundred sixty feet east.
Village street. Compton street to Castle street.

SOUTH BOSTON.

A street. Congress street to Binford street.
Congress street. Fort Point channel to A street.
Congress street. A street to New England railroad.
D street. Dorchester avenue to West Seventh street.
Dorchester street. West Eighth street to Dorchester avenue.
Kemp street. Washington avenue to Columbia road.

EAST BOSTON.

(Including Breed's Island.)

Addison street. Metropolitan Pumping station to Kneller street.
Boardman street. Ashley street to Saratoga street.

Curtis street. Chelsea street to Pope street.
Frankfort street. Prescott street to Neptune road.
Kneller street. Addison street to Trumbull street.
Marion street. Bremen street to Orleans street.
Meridian street. Havre street to Paris street.
Prescott street. Bremen street to Cleveland street.
Saratoga street. Boardman street to Bennington street.

CHARLESTOWN.

Bunker Hill street. Jackson street to Moulton street.
Chestnut street. From Bunker Hill street, about 160 feet north.
Corey street. From Moulton street about 180 feet north.
Vine street. Bunker Hill street to Chelsea street.
Winthrop street. Adams street to Warren street.

ROXBURY.

Beech Glen street. Fort avenue, southerly.
Bower street. Humboldt avenue to Sherman street.
Cherokee street. Hillside street, northerly.
Edgewood street. Blue Hill avenue to Southwood street.
Elm Hill avenue. Howland street to Warren street.
Fisher avenue. Parker street to Bucknam street.
Fort avenue. Highland Park avenue to Highland Park street.
Hammond street. Tremont street to Shawmut avenue.
Hampshire street. Whittier street to Ruggles street.
Harleston street. Calumet street to Parker Hill avenue.
Longwood avenue. Huntington avenue to Phillips street.
Newbury street. Massachusetts avenue, westerly.
Parker Hill avenue. Harleston street to Calumet street.
Ruggles street. Cabot street to Shawmut avenue.
Wyoming street. Humboldt avenue to Wabeno street.

DORCHESTER.

Adams street. Ashmont street to Wrentham street.
Ashmont street. Adams street to Florida street.
Bearse street. Butler street to Medway street.
Boutwell street. Neponset avenue to Train street.
Butler street. Vose street to Shawmut Branch railroad.
Buttonwood court. Off Buttonwood street.
Cedar street. River street to Sanford street.
Church street. Bowdoin street to Winter street.
Clapp place. From Roseclair street, about 400 feet north.
Englewood street. Hillside street to Parkview street.
Fields court. From Willow court.
Flint street. Norfolk street to the railroad.
Freeport street. Neponset avenue to railroad.
Greenock street. Blue Hill avenue to Harvard street.
Groveland street. Manchester street to River street.
Hamilton street. Bowdoin street to Coleman street.

Harvard street. From Austin street 400 feet south.
Highland street. East street to High street.
Hillsdale street. Codman street to Richview street.
Hillsdale street. Adams street to Richview street.
Lucerne street. Harvest street to Morton street.
Medway street. Bearse street to Vose street.
Prescott place. Church street to Winter street.
Richmond street. Dorchester avenue to Washington street.
Richview street. Codman street to Parkview street.
River street. Blue Hill avenue to Riverside place.
River street. Blue Hill avenue to point 300 feet west.
River street. Groveland street to Idaho street.
Rockville street. Oakland street to point 800 feet east.
Walk Hill street. Almont street to Mulvey street.
Willow court. Baker court to Boston street.
Woodlawn avenue. Delhi street to West Selden street.
Woolson street. Norfolk street to Wildwood street.
Vose street. Butler street to Medway street.

WEST ROXBURY.

Abbot street. From Willow street about 190 feet east.
Arborway. Traffic road from Custer street about 571 feet south.
Beech street. From 100 feet northeast of Kittredge street to about 360 feet southeast of Kittredge street.
Belgrade avenue. Corinth street to Aldrich street.
Birch street. Albano street to Dudley avenue.
Dudley avenue. Fresno street to Bellevue avenue.
Houston street. From 140 feet south of Metcalf street to Metcalf street.
Hyde Park avenue. Walk Hill street to Larch place.
La Grange street. Centre street to Landseer street.
Landseer street. From La Grange street 580 feet northeast.
Linden street. Bellevue avenue to Beech street.
Montello street. Belgrade avenue to Colberg avenue.
Metcalf street. Houston street to Penfield street.
Mozart street. From Walter street about 185 feet west.
Penfield street. Birch street to Summit, near Linden street.
Rowe street. Ashland street to Seymour street.
Seymour street. Brown avenue to Canterbury street.
South Walter street. Robert street to South Fairview street.
South Fairview street. Robert street to South Walter street.

BRIGHTON.

Cummings road. From 355 feet east of Commonwealth avenue to about 245 feet east.
Jackson avenue. From Academy Hill road to about 250 feet east.
Parkman street. From Brooks street 250 feet northwesterly.
Stratton street. Bigelow street to Atkins street.

APPENDIX E.

ENGINEERING DEPARTMENT PROPERTY SCHEDULE, MAIN OFFICE.

1 horse.	Reference library, 1,471 volumes.
2 carriages.	14,693 plans engineering works,
1 automobile.	loose.
1 sleigh.	14 volumes plans engineering
2 harnesses.	works, bound.
3 robes.	Photographs of engineering works.
Instruments for drawing.	1 microscope.
Instruments for surveying, as fol-	1 mercurial barometer.
lows:	1 aneroid barometer.
2 Temple transits.	1 holstetric barometer.
7 Buff & Berger transits.	1 set hydrometers.
1 Berger & Sons transit.	1 hygrometer.
1 P. & R. Wittstock transit.	1 pair field glasses.
8 Gurley transits.	3 typewriters.
1 Keuffel & Esser level.	2 dynamometers.
2 Temple levels.	1 pantagraph.
4 Buff & Berger levels.	3 calculating machines.
7 Gurley levels.	1 volt meter.
13 Boston rods.	1 comptometer.
4 New York rods.	2 thermophones.
10 Troy rods.	2 cameras.
4 Philadelphia rods.	3 planimeters.
Apparatus for blue printing.	1 Bourdon pressure gauge.
Cases for plans and books.	1 Burroughs arithmometer.

SURVEYING DIVISION.

2 Temple transits.	1 Moody level.
1 Moody transit.	18 Boston rods.
4 Buff & Berger transits.	7 pipe rods.
2 Berger & Sons transits.	32,669 plans.
1 Buff & Buff transit.	3,747 lithographed maps.
1 Stackpole transit.	1 pantagraph.
1 Troughton & Sims transit.	3 planimeters.
1 P. & R. Wittstock transit.	1 Federal blue printing machine,
7 Buff & Berger levels.	No. 10.

APPENDIX F.

Elevations referred to Boston City base. *(The City base is 0.64 feet below mean low tide.)

Feet.

- 0.00 City base.
- 15.66 Highest tide, April 16, 1851.
- 15.45 Coping old dry dock, Charlestown Navy Yard, at left of entrance.
- 15.11 Coping old dry dock, Charlestown Navy Yard, new bench, over crowfoot.
- 12.14 Greatest elevation of high tide, per United States Tide Tables, May 10, June 7, November 17, 18, December 16, 17, 1906; $(11.5 + .64) = 12.14$.
- 8.14 Least elevation of high tide, per United States Tide Tables, September 12, 1906; $(7.5 + .64) = 8.14$.
- 2.54 Greatest elevation of low tide, per United States Tide Tables, April 1, 2, 1906; $(1.9 + .64) = 2.54$.
- 1.46 Least elevation of low tide, per United States Tide Tables, November 17, 1906; $(-2.1 + 4.6) = -1.46$.
- *0.64 Mean low tide.
- 5.00 Piles cut off for building.
- 10.00 Water works (old base) approximate tide-marsh level.
- 0.38 South Boston flats base (State).
- 9.82 South Boston base, formerly in use, but now abandoned.
- 100.00 Metropolitan Sewerage base.
- 100.00 Charles River Basin Commission base.
- 100.00 Boston Transit Commission base.
- 4.98 Cambridge City base.
- 0.64 Somerville City base.
- 0 60 Harbor and Land Commission base.

* Mean low water January, 1903. Computed from tidal observations taken during the year 1902, at the Charlestown Navy Yard, is 0.79 feet above Boston City base.

John R. Freeman in Report on Charles River Dam, 1903, page 570.

Navy Yard base above Boston base is	0.58
Mean High Water above Boston base	10.63
Mean Low Water above Boston base	0.79
Mean range of tide	9.84
Mean Sea Level above Boston base	5.71

Definition of Boston City base: Boston City base is a datum plane 15 feet above the average height of the sill of the Charlestown Dry Dock. (Page 552, Report of the Commission on Charles River Dam, 1903.)

The following tidal records may be of interest:

High Tides.

[Plane of reference, Boston City Base.]

Feet.	Date.	Where Taken.	By Whom.
14.12	Jan. 23, 1898	Mt. Washington-avenue bridge.....	A. B. Corthell.
14.94	Nov. 27, 1898	Average of 15 observations.....	
13.72	Nov. 8, 1900	Malden bridge.....	F. P. Spalding.
13.95	May 20, 1901	Malden bridge.....	F. P. Spalding.
14.19	Nov. 25, 1901	Average of 10 observations.....	
13.60	Dec. 14, 1902	North Ferry, City Proper.....	J. H. Edmonds.
13.00	Feb. 17, 1903	North Ferry, City Proper.....	J. H. Edmonds.
13.40	Jan. 14, 1904	North Ferry, City Proper.....	J. H. Edmonds.
13.00	Feb. 1, 1904	North Ferry, City Proper.....	J. H. Edmonds.
13.10	Mar. 1, 1904	Mt. Washington-avenue bridge.....	Boston Terminal Co.
13.10	Mar. 3, 1904	Mt. Washington-avenue bridge.....	Boston Terminal Co.
13.20	Jan. 4, 1905	North Ferry, City Proper.....	J. H. Edmonds.
14.83	Jan. 25, 1905	Average of 34 observations.....	
13.10	Mar. 21, 1905	North Ferry, City Proper.....	J. H. Edmonds.

Low Tides.

5.60	Nov. 27, 1898	Deer Island, Met. sewer station.	Self-recording gage.
-3.50	Feb. 1, 1900	Deer Island, Met. sewer station.....	Self-recording gage.
-2.94	Feb. 3, 1900	South Boston station, Edison Electric..	D. A. Harrington.
-3.00	Feb. 4, 1904	Deer Island, Met. sewer station.....	Self-recording gage.
-2.70	Mar. 23, 1905	Deer Island, Met. sewer station.....	Self-recording gage.

APPENDIX G.

ENGINEERING DEPARTMENT ANNUAL REPORTS, 1867-1905.

No. of Reports.	For the Year.	Year Published and No. City Document.	No. of Reports.	For the Year.	Year Published and No. City Document.
First	*1867	1868 — 22	Twenty-second.....	1888	1889 — 38
Second and Third.....	1868-69	1870 — 14	Twenty-third	1889	1890 — 39
Fourth	1870	1871 — 15	Twenty-fourth	*1890	Executive Department Report, Document 1, Part 1. 1891.
Fifth and Sixth.....	*1871-72	1873 — 23			
Seventh	*1873	1874 — 20			
Eighth	1874	1875 — 19	Twenty-fifth	1891	1892 — 11
Ninth	1875	1876 — 24	Twenty-sixth	1892	1893 — 10
Tenth.....	*1876	1877 — 15	Twenty-seventh	1893	1894 — 10
Eleventh	*1877	1878 — 20	Twenty-eighth	1894	1895 — 10
Twelfth	*1878	1879 — 22	Twenty-ninth	1895	1896 — 10
Thirteenth	*1879	1880 — 33	Thirtieth	1896	1897 — 10
Fourteenth	*1880	1881 — 25	Thirty-first	1897	1898 — 12
Fifteenth	1881	1882 — 52	Thirty-second.....	1898	1899 — 12
Sixteenth	1882	1883 — 53	Thirty-third	1899	1900 — 14
Seventeenth	*1883	1884 — 55	Thirty-fourth	1900	1901 — 14
Eighteenth	*1884	1885 — 54	Thirty-fifth	1901	1902 — 15
Nineteenth	*1885	1886 — 41	Thirty-sixth	1902	1903 — 15
Twentieth	*1886	1887 — 38	Thirty-seventh	1903	1904 — 15
Twenty-first	*1887	1888 — 39	Thirty-eighth	1904	1905 — 15
Special Report.....	1888	1888 — 117	Thirty-ninth	1905	1906 — 15

* Out of Print.

APPENDIX H.

(REVISED ORDINANCES, 1898, CHAPTER 16.) ENGINEERING
DEPARTMENT.

SECTION 1. The Engineering Department shall be under the charge of the City Engineer, who shall be consulted on all matters relating to public improvements of every kind in respect to which the advice of a civil engineer or architect would be of service; shall, unless otherwise specifically provided, take charge of the construction of all public works of the city which properly come under the direction of a civil engineer; shall make such surveys, plans, estimates, statements, and descriptions, and take such levels and prepare such specifications and contracts as the mayor, the board of aldermen, the common council, any committee of the city council or of either branch thereof, the board of street commissioners, or any officer in charge of a department, may need in the discharge of its duties; shall, upon being notified by the superintendent of streets, supervise all repairs on the bridges of the city used as highways which affect the safety of the structures, and shall, when required by the mayor or any officer in charge of a department, measure the work done by contract for the city, and certify to the results of such measurement. Said engineer shall have the custody of all surveys and plans relating to the laying out, locating anew, altering, widening and grading of streets; and his office shall be deemed to be the office of the surveyor of highways.

SECT. 2. Said engineer shall, in his annual report, include a report upon the safety and completeness of all ponds, basins and reservoirs under the charge of the water department, and of all bridges within the city limits used as highways.

(Stat. 1870, Chap. 337 — Stat. 1895, Chap. 449, par. 21.)

APPENDIX I.

MERIDIAN LINE.

In 1870 an act was passed by the Massachusetts Legislature requiring each land surveyor in the State at least once in every year to adjust and verify his compass by the meridian line, established in the county wherein his surveys were to be made.

A meridian was marked by stone monuments, and a book of record kept by a custodian designated by the County Commissioners.

The law compelling surveyors to test their compasses annually was modified in 1875, so that surveyors who did not use the compass in turning angles were relieved from the penalty attaching to the violation of the original act.

The meridian posts for the County of Suffolk were placed on the southerly portion of the "Parade Ground," on Boston Common. They are granite posts, three in number, placed 200 feet apart, are eighteen inches square at the base, one foot square at the top, and eight feet long, being firmly set in a bed of concrete with their tops originally just below the surface of the ground.

A stone curb was placed even with the surface of the ground over the top of each post, with a metallic composition cover.

The surface of that part of the Common where the posts are set was raised several feet in 1897, the posts being protected by building a brick manhole around each stone, the posts being accessible by the removal of the manhole cover.

As the cover and cap of the manholes are made of iron, it is now necessary to set up the compass in the production of the line marked by the monument to avoid local attraction. The point selected has been 290 feet north of the northerly stone.

The following table gives the number of tests for each year with the average readings:

YEAR.	Number of Readings.	Average of Readings West of North.	YEAR.	Number of Readings.	Average of Readings West of North.
1871.....	9	10-53-46	1888.....	3	11-40-57
1872.....	8	11-09-47	1889.....	—	
1873.....	3	11-07-53	1890.....	7	11-39-56
1874.....	3	11-11-40	1891.....	4	11-49-30
1875.....	3	10-58-33	1892.....	—	
1876.....	2	11-13-00	1893.....	1	12-32-20
1877.....	8	11-12-35	1894.....	—	
1878.....	13	11-28-56	1895.....	—	
1879.....	4	11-35-15	1896.....	—	
1880.....	7	11-34-53	1897.....	8	12-04-37
1881.....	3	11-28-23	1898.....	6	12-34-34
1882.....	5	11-36-18	1899.....	—	
1883.....	5	11-42-04	1900.....	8	12-33-45
1884.....	6	11-46-13	1901.....	—	
1885.....	8	11-43-12	1902.....	13	12-44-44
1886.....	4	11-39-58	1903.....	8	12-43-42
1887.....	14	11-51-54	1904.....	4	12-48-45
			1905.....	12	12-56-42

APPENDIX J.

GRADES OF BOSTON STREETS, 1905.

	Per cent.
C—State street, opposite Exchange Building	about 2.00
C—State street, Washington to Devonshire, north side	4.60
C—Devonshire street, Adams sq. to State street	2.90
B—Warren ave., Charlestown, City sq. to railroad	2.80
C—Washington street, across Adams sq., from corner Brattle street to corner Dock sq.	4.00
B—Beacon street, from Somerset to Tremont street:	
From Somerset street, 125 ft.	6.60
Average for whole length	6.60
F—Beacon street, from Joy to Spruce street, 695 ft.	5.70
C—Cornhill, from Court street to Franklin ave., 270 ft., average,	4.00
F—Garden street	15.00
F—Irving street	15.60
F—Park street, from Beacon to Tremont street, 144 ft. from	
Beacon	9.30
325 ft.	4.80
C—School street, from Tremont to Washington street, 100 ft. . . .	5.20
100 ft.	4.40
350 ft.	3.10
A—Tremont street, from Winter to Hamilton pl., 150 ft. . . .	4.20
A—From Winter, toward Temple pl., 180 ft.	2.50
C—Washington street, from Court street to Cornhill	3.00
D—Washington street, from Harvard pl., 160 ft. southerly	2.30
D—Washington street, from Franklin street, 190 ft. southerly . .	1.30
D—Washington street, from West street, 170 ft. southerly . . .	1.50
D—Washington street, from Essex street, 205 ft. northerly . . .	1.30

Milk Street.

C—First 100 feet east of Washington	4.67
C—Second “ “ “ “	4.48
C—Third “ “ “ “	3.65
C—Fourth “ “ “ “	3.14
C—Fifth “ “ “ “	3.00

Pearl Street.

C—First 100 feet south of Franklin	3.23
C—Second “ “ “ “	2.92
C—Third “ “ “ “	2.60
C—Fourth “ “ “ “	1.63
C—Sixth “ “ “ “	3.43
C—Seventh “ “ “ “	3.90
C—Eighth “ “ “ “	4.80
C—Remaining distance to Atlantic avenue (36.6 feet)	4.80

A—Asphalt.

B—Granite blocks on gravel.

C—Granite blocks, concrete base.

D—Wooden blocks.

F—Macadam.

Boylston Street.

								Per cent.
B—First	100 feet west of Washington	.	.	.	.	.	.	2.61
B—Second	" " " "	.	.	.	.	.	.	2.87
B—Third	" " " "	.	.	.	.	.	.	2.53
D—From Carver street (246 feet) east		.	.	.	.	.	.	2.93
D—From Park square (35 feet) east		.	.	.	.	.	.	4.33
A—First	100 feet east of Arlington	.	.	.	.	.	.	2.34
A—Second	" " " "	.	.	.	.	.	.	1.33

South Street.

C—First	100 feet south of Summer	.	.	.	.	.	.	0.74
C—Second	" " " "	.	.	.	.	.	.	2.10
C—Third	" " " "	.	.	.	.	.	.	2.05
C—Fourth	" " " "	.	.	.	.	.	.	2.26
C—Fifth	" " " "	.	.	.	.	.	.	1.95

Congress Street.

C—First	100 feet north of Exchange place	2.39
C—Second	" " " "	.	.	.	.	.	.	2.30
C—First	" " south of Franklin	.	.	.	.	.	.	1.09
C—Second	" " " "	.	.	.	.	.	.	2.36
C—Third	" " " "	.	.	.	.	.	.	2.21
C—Fourth	" " " "	.	.	.	.	.	.	2.20
C—Sixth	" " " "	.	.	.	.	.	.	2.37
C—Seventh	" " " "	.	.	.	.	.	.	4.24
C—Eighth	" " " "	.	.	.	.	.	.	3.45
C—Remaining distance to Atlantic avenue (15 feet)		.	.	.	.	.	.	2.96

Exchange Street.

C—First	100 feet north of State	.	.	.	.	.	.	0.98
C—Second	" " " "	.	.	.	.	.	.	2.46
C—Third	" " " "	.	.	.	.	.	.	3.39

APPROACHES TO BRIDGE OVER B. & A. R.R., ON BEACON STREET
AND BROOKLINE AVENUE.*Beacon Street.*

F—First	100 feet west of bridge	.	.	.	.	.	.	1.64
F—Second	" " " "	.	.	.	.	.	.	2.64
F—Third	" " " "	.	.	.	.	.	.	2.77
F—Fourth	" " " "	.	.	.	.	.	.	2.53
F—Fifth	" " " "	.	.	.	.	.	.	2.08
F—Sixth	" " " "	.	.	.	.	.	.	1.95
F—Seventh	" " " "	.	.	.	.	.	.	1.33
F—Remaining 32.5 feet to foot of approach		.	.	.	.	.	.	0.92
F—Length of approach, 732.5 feet.		.	.	.	.	.	.
F—Average gradient		.	.	.	.	.	.	2.08

F—First	100 feet east of bridge	.	.	.	.	.	.	0.90
F—Second	" " " "	.	.	.	.	.	.	1.53
F—Third	" " " "	.	.	.	.	.	.	1.71
F—Fourth	" " " "	.	.	.	.	.	.	1.71
F—Fifth	" " " "	.	.	.	.	.	.	1.71
F—Sixth	" " " "	.	.	.	.	.	.	1.71
F—Seventh	" " " "	.	.	.	.	.	.	1.71
F—Eighth	" " " "	.	.	.	.	.	.	1.53
F—Ninth	" " " "	.	.	.	.	.	.	0.68
F—Length of approach, 750 feet.		.	.	.	.	.	.
F—Average gradient		.	.	.	.	.	.	1.51

A—Asphalt. B—Granite blocks on gravel.
C—Granite blocks, concrete base. D—Wooden blocks.
F—Macadam.

Brookline Avenue.

									Per cent.
F—First	100 feet southwest of bridge	.	.	.	.	.	.	.	3.06
F—Second	" " " "	.	.	.	.	.	.	.	3.06
F—Third	" " " "	.	.	.	.	.	.	.	3.06
F—Fourth	" " " "	.	.	.	.	.	.	.	2.90
F—Fifth	" " " "	.	.	.	.	.	.	.	2.25
F—Sixth	" " " "	.	.	.	.	.	.	.	1.50
F—Seventh	" " " "	.	.	.	.	.	.	.	0.75
F—Length of approach,	700 feet.								
F—Average gradient	.	.	.	.	.	.	.	.	2.36

F—First	100 feet northwest of bridge	.	.	.	.	.	.	.	3.47
F—Second	" " " "	.	.	.	.	.	.	.	3.69
F—Third	" " " "	.	.	.	.	.	.	.	3.23
F—Fourth	" " " "	.	.	.	.	.	.	.	2.10
F—Remaining 74 feet to foot of approach	.	.	.	.	.	.	.	.	1.19
F—Length of approach,	474 feet.								
F—Average gradient	.	.	.	.	.	.	.	.	2.77

F—Macadam.

APPENDIX K.

WIDTHS OF BOSTON STREETS, 1905.

	Roadway	
	width.	Total width.
Winter street	19.5	36.0
North street, between Union street and Merchants row,	19.0	31.0
Exchange street	15.5	25.0
State street, opposite Exchange Building	38.0	63.0
Court street, between Ames and Sears Buildings	24.9	41.7
Washington street, between Cornhill and Court street, 23.5-28.0	41.5-45.0	
Washington street, corner of Summer street (north)	40.7	60.0
Washington street, corner of Summer street (south)	32.5	49.5
Washington street, north side of Hanover street	40.0	60.0
Portland street, near Causeway street	34.3	50.0
Canal street, near Causeway street	50.0	75.0
Haverhill street, near Causeway street	32.2	49.0
Beverly street, near Causeway street	36.0	50.0
Washington street, North, near Causeway street	68.0	92.0
Washington street, North, near Medford street	68.0	92.0
Kilby street, near State street	25.2	39.3
Columbus avenue, between Berkeley street and R. R. bridge	54.0	80.0
Columbus avenue, between R. R. bridge and Dartmouth street	54.0	80.0
Albany, at Dover	54.0	80.0
Arlington, at the Public Garden	50.0	80.0
Atlantic avenue, at Broad	78.3	100.0
Atlantic avenue, at Commercial wharf	78.3	100.0
Atlantic avenue, near Commercial wharf	78.3	100.0
Beacon, at Clarendon	47.9	72.0
Beacon, at Brimmer	61.0	89.0
Beacon, at River	66.8	93.0
Berkeley, at Stanhope	54.5	80.0
Battery, near North Ferry	45.0	65.0
Blackstone, near south side North	45.5	61.5
Boylston, at M. I. T.	49.5	78.5
Broad, near Central	49.5	70.0
Canal, near Market street	50.0	75.0
Central, near Atlantic avenue	48.3	68.5
Charles, at the Common	52.0	80.0
Commercial, at Cross	48.5	67.7
Court, between Brattle and Hanover	62.0-38.0	89.0-62.0
Commercial, at Hanover	60.0	80.0
Dartmouth, at Commonwealth avenue	70.0	100.0
Eastern avenue, near South Ferry	54.2	70.0
Atlantic avenue, at Essex	70.0	100.0
Leverett, near Charles	46.0	62.0
Lincoln, at Beach	44.8	64.5
Massachusetts avenue, at Commonwealth avenue	62.9	90.0
Mercantile	46.0	66.0
Milk, at Post Office	41.0-46.0	60.0-65.0
South Market, at north side Commercial	76.6	101.0
North Market, at Commercial	44.0	64.3
State, at State-street Block	66.5	86.0
Tremont, at West Newton	70.0	100.0
Washington, at Worcester	80.0	107.0

CONTENTS.

REPORT ENGINEERING DEPARTMENT FOR 1905.

[General Index to Contents Engineering Department Reports, 1867-1892, will be found in Report of February 1, 1892.]

	PAGE.
Engineering Department.....	1
STATEMENT OF EXPENSES, Abolishment grade crossings:	
" " " Blue Hill avenue and Oakland street	2
" " " Cambridge and Perkins streets, Charlestown.....	3
" " " Congress street.....	3
" " " Dorchester avenue.....	3
" " " East Boston.....	3
" " " Atlantic-avenue bridge.....	4
" " " Broadway bridge, Rebuilding...	4
" " " Brookline-street bridge.....	4
" " " Engineering Department.....	2
" " " Northern avenue and Sleeper street.....	5
" " " Stairs from Summer street to A street.....	5
Bridges Inspected.....	5
" wholly supported by Boston	6
" " " " railroads	32
" of which Boston supports the part within its limits..	8
" " " " pays a part of the cost of main-tenance	8
" supported by railroad corporations.....	9
" " " " " Boston & Albany R.R.....	9
" " " " " Boston & Maine R.R.and B.&A. R.R.....	9
" " " " " Boston & Maine R.R., Eastern Div.....	9
" " " " " Boston, Revere Beach & Lynn R.R.....	9
" " " " " N.Y., N.H. & H. R.R., Midland Div.....	9
" " " " " N.Y., N.H. & H. R.R., Old Colony Div.....	10
" " " " " N.Y., N.H. & H. R.R., Prov.Div.	10
" " " Metropolitan Park Commission.....	10
" " " Charles River Basin Commission.....	10
" Total number (148).....	11

	PAGE.
Bridges	5
Agassiz road, in the fens.....	11
Albany street, over B. & A. R.R. freight tracks.....	11
Allston, over B. & A. R.R.....	11
Arborway, over Stony brook parkway.....	11
Ashland street, over Prov. Div. N.Y., N.H. & H. R.R.....	12
Ashmont street and Dorchester avenue, over Old Colony Div. N.Y., N.H. & H. R.R.....	12
Athens street, over Midland Div. N.Y., N.H. & H. R.R.....	12
Audubon road, over B. & A. R.R.....	12
Beacon street, over outlet of the fens.....	12
Beacon street, over B. & A. R.R.....	12
Bellevue street, over Muddy river, in Riverway.....	13
Bennington street, over B., R.B. & L. R.R.....	13
Berkeley street, over B. & A. R.R. and Prov. Div. N.Y., N.H. & H. R.R.....	13
Bernier-street foot-bridge, over Bridal path. Riverway.....	13
Bernier-street foot-bridge, over Muddy river.....	13
Berwick park foot-bridge, over Prov. Div. N.Y., N.H. & H. R.R.....	13
Blakemore street, over Prov. Div. N.Y., N.H. & H. R.R.....	14
Blue Hill avenue, over Midland Div. N.Y., N.H. & H. R.R....	14
Bolton street, over Midland Div. N.Y., N.H. & H. R.R.....	14
Boston street, over Old Colony Div. N.Y., N.H. & H. R.R....	14
Boylston street, Back Bay fens.....	14
Boylston street, B. & A. R.R.....	14
Bridle Path, over Muddy river, in Riverway.....	15
Broadway, over Fort Point channel.....	15
Broadway, over B. & A. R.R.....	15
Brookline avenue, over B. & A. R.R.....	15
Brookline avenue, over Muddy river, in Riverway.....	15
Brookline street to Cambridge.....	16, 77
Brooks street, Brighton.....	16
Byron street, B., R.B. & L. R.R.....	16
Cambridge street.....	16
Cambridge street, over B. & M. and B. & A. R.R.....	16
Canal or Cragies, temporary.....	20
Castle Island foot-bridge.....	17
Central avenue, over Neponset river.....	17
Charlesgate, in the fens, over B. & A. R.R.....	17
Charlesgate, in the fens, over Ipswich street.....	17
Charlestown.....	17
Chelsea, over B. & M. R.R.....	17
Chelsea (North).....	18
Chelsea (South).....	18
Chelsea street.....	18
Circuit drive, over Scarboro' pond, in Franklin Park.....	18
Columbia road, over Old Colony Div. N.Y., N.H. & H. R.R..	19
Columbia road, over Shoreham street.....	19
Columbus avenue, over B. & A. R.R. and Prov. Div. N.Y., N.H. & H. R.R.....	19
Commercial Point or Tenean.....	19
Commonwealth avenue, in the fens.....	19
Congress street.....	20, 71
Cottage Farm, over B. & A. R.R.....	20
Cottage-street foot-bridge.....	20, 71
Dartmouth street, over B. & A. R.R. and Prov. Div. N.Y., N.H. & H. R.R.....	20
Dorchester avenue, over Fort Point channel.....	21
Dorchester avenue, over Old Colony Div. N.Y., N.H. & H. R.R.....	21

Bridges, continued.

	PAGE.
Dover street.....	21, 72
Ellicott arch, in Franklin Park.....	22
Everett street, over B. & A. R.R.....	22
Fen bridge, in the fens.....	22
Ferdinand street, over B. & A. R.R.....	22
Forest Hills entrance in Franklin Park.....	22
Gainsborough-street foot-bridge, over Prov. Div. N.Y., N.H. & H. R.R.....	22
Gold street, over Midland Div. N.Y., N.H. & H. R.R.....	22
Granite to Milton.....	23
Harvard to Cambridge.....	23
Harvard street, over Midland Div. N.Y., N.H. & H. R.R.....	23
Huntington avenue, over B. & A. R.R.....	23
Huntington avenue, over Muddy river.....	24
Ipswich street, over waterway in the fens.....	24
Irvington-street foot-bridge, over Prov. Div. N.Y., N.H. & H. R.R.....	24
L-street bridge.....	24
Leverett pond foot-bridge, in Leverett Park.....	24
Linden Park street, over Stony brook.....	24
Longwood avenue, over Muddy river and B. & A. R.R.....	24
Malden.....	24
Massachusetts avenue, over B. & A. R.R.....	25
Massachusetts avenue, over Prov. Div. N.Y., N.H. & H. R.R., Mattapan to Milton.....	25
Meridian street.....	25
Milton.....	26
Mt. Washington avenue.....	26
Neponset.....	26
Neptune road, over B., R.B. & L. R.R.....	26
Newton street, over Prov. Div. N.Y., N.H. & H. R.R.....	26
Norfolk street, over Midland Div. N.Y., N.H. & H. R.R., Dor- chester.....	27, 72
Norfolk street, over Midland Div. N.Y., N.H. & H. R.R., near Mattapan.....	27
North Beacon street.....	27
North Harvard street.....	27
Oakland street, over Midland Div. N.Y., N.H. & H. R.R.....	27
Perkins-street foot-bridge, over B. & M. R.R. and B. & A. R.R.....	28
Prison Point.....	28
Public Garden foot-bridge.....	28
Scarboro' pond foot-bridge, Franklin Park.....	28
Shawmut avenue, over B. & A. R.R. and N.Y., N.H. & H. R.R., Southampton-street bridges, over South Bay sluices.....	28
Southampton street, over O.C. Div. N.Y., N.H. & H. R.R.....	29
Spring street.....	29
Summer street, over A street.....	29
" " B ".....	29
" " C ".....	29
" " Fort Point channel.....	29
" " N.Y., N.H. & H. R.R. freight tracks....	30
Warren.....	30
West Boston, temporary.....	30
West Fourth street, over O.C. Div. N.Y., N.H. & H. R.R.....	30
West Rutland-square foot-bridge, over Prov. Div. N.Y., N.H. & H. R.R.....	31
Western avenue to Cambridge.....	31
Western avenue to Watertown.....	31
Winthrop.....	31
Wood Island Park foot-bridge.....	31

	PAGE.
Surveying Division	33
Lines and grades given, and paving work measured, 1905 :	
Boston Proper.....	39
Brighton.....	57
Charlestown.....	46
Dorchester.....	51
East Boston and Breed's Island.....	45
Roxbury.....	46
South Boston.....	42
West Roxbury.....	55
Plans in Surveying Division.....	59
Miscellaneous Work and Construction in 1905 :	
Atlantic-avenue bridge.....	77
" " reconstruction.....	71
Brookline-street bridge.....	16, 77
Congress-street bridge.....	20, 71
Cottage-street foot-bridge.....	20, 71
Dover-street bridge.....	21, 72
East Boston Ferries.....	72
Gallops Island.....	79
Grade Crossings:	
Dorchester.....	79
Dudley street.....	79
East Boston.....	79
Norfolk-street bridge, Dorchester.....	27, 72
Northern-avenue bridge.....	80
Rainsford Island.....	81
Stairway from Summer-street bridge to A street.....	72
Voting booths.....	81
Street Department :	
Working plans, specifications and forms contract were prepared and forwarded for assessment streets.....	73
Plans and specifications for repaving streets.....	73, 74
Grading Street Railway Tracks:	
Boston Elevated Railway Company.....	75
SURVEYS, PLANS, ETC.....	76
Water Department :	
Dover-street tunnel.....	66
Electrical investigation.....	68
Extension of mains.....	67
Table showing the average stated monthly heights in feet, above city base, to which water rose at different stations on the Boston water works..	70
" " monthly rainfall in inches during 1905 at various places in Eastern Massachusetts...	70
General statistics.....	69
City Engineers, 1850-1904	82

APPENDICES.

	PAGE.
APPENDIX A. — Table showing the widths of openings for vessels in all bridges provided with draws.....	84
B. — Table of accident and other plans made for the Law Department.....	86
C. — Table of surveys, plans and profiles made by Surveying Division.....	89
D. — List of streets where estate measurements have been obtained for Sewer Division, Street Department, for Sewer assessments.....	95
E. — Engineering Department property schedule.....	98
F. — Elevations referred to Boston city base.....	99
G. — Engineering Department annual reports, 1867-1905.....	101
H. — Engineering Department, Revised Ordinances...	102
I. — Meridian line.....	103
J. — Grades of streets.....	104
K. — Widths of streets.....	107

ILLUSTRATIONS.

Proposed tunnel for water-pipe across Fort Point channel.....	66
30-inch cast-iron flanged pipe, crossing Washington street at Essex street, looking north.....	65



BOSTON PUBLIC LIBRARY



3 9999 06315 949 3

